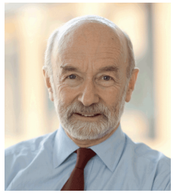
CSAR

Cambridge Society for the Application of Research

AWARDS RECEPTION

3 APRIL | OLD SCHOOLS | CAMBRIDGE

Welcome



It is a pleasure to welcome old and new friends to this year's CSAR PhD Student Award competition reception.

The competition is designed to encourage and reward students who can demonstrate both excellence and application in their research. It has become increasingly popular, not only with applicants, but also with CSAR audiences, who are given an insight into emerging research when winners give their brief presentation before a scheduled lecture.

CSAR is a charity, and our objective is to encourage an appreciation of the application of research. We are confident that more progress can be made in building networks of people and designing events to fulfill our mission.

We are honoured to have such a distinguished group of guests at this reception, and we look forward to continued engagement with you in the future.

Professor Sir Mike Gregory

President, CSAR
On behalf of The Council

CSAR was founded in 1964 by the then Master of Churchill College – Sir John Cockroft. The aim was to build bridges between the University and Industry to encourage the more active exploitation of emerging ideas. The Society has evolved over the years and extended its remit to what might today be called the public understanding of science and the encouragement of young researchers in addition to a regular and well-attended programme of distinguished lectures and visits which are open to the public.

The lecture programme seeks to introduce the latest scientific and technological ideas to a wider public through leading figures in their field. The Society is fortunate in being able to attract many world leading figures including, in recent years Dr Demis Hassabis (co-founder and CEO of DeepMind, Vice President of Engineering at Google DeepMind) and Dr Menelas Pangalos (Executive Vice-President, Astra Zeneca).

A student award competition was launched in 2013 and has become a major part of our activities. Over 150 applications are typically received from young researchers able to demonstrate both the excellence of their research and the opportunities for its application. Up to ten awards are made and this year for the first time the achievements are being recognized through a reception in the University Combination Room.

CSAR is run by volunteers. Membership subscriptions and on-the-door payments allow us to run our lecture series. Donations and grants to the charity allow us to subsidise attendance by students, school students and teachers. The CSAR Student Awards are funded solely from donations.

"This was one of the best public lectures I have had the pleasure of attending"

"One of the most inspirational speakers and subjects that I have had the privilege to listen to"

UPCOMING CSAR LECTURES

Dr Gerard Lyons, Netwealth Investments "Clean Brexit - how to make a success of leaving the EU"

Emily Alison & Prof. Laurence J. Alison, University of Liverpool "Effective terrorist interrogation without torture - why tough tactics fail, and rapport gets results"

Prof. Magdalena Zernicka-Goetz, University of Cambridge "Creating the first self-developing embryo from stem cells"

ABOUT THE COMPETITION

Last year Sir Leszek Borysiewicz, met with the 2017 CSAR PhD Student Award winners in his office together with several CSAR Council members.

The PhD Student Awards of £1000 are intended to recognise outstanding research with real world application and to assist students to pursue their research or careers. PhD students in any discipline currently studying at the University of Cambridge are eligible to apply. The applicant is initially required to submit a description of their research and its real world application, of no more than 100 words, to be submitted online.

There is one round of applications each year, closing in December. The selection committee then has the task of sorting through over 150 applications to decide on who to interview. References are taken up and interviews are conducted around February. The number of awards is not set, rather it is determined by the quality of applicants.

Student Award winners are asked to give a brief presentation about their work to CSAR membership before a scheduled lecture, which allows their research to reach a wider audience, and allows those who generously contribute to see how their donations are helping students with important work. Award winners are invited to a meeting with the Vice Chancellor of the University of Cambridge.

This year, as most years, the Awards have been funded solely by donations.

The Winners

THE WINNERS

Alexander Avramenko

Department of Materials Science and Metallurgy

My background is in Physics (BSc), Scientific computing (MPhil) and Materials Science - I am currently in the 4th year of a PhD. My research is on solid-state device materials for the purpose of environmentally friendly cooling. My aims for the future are to pursue an industry career in commercialisation of device materials through a combination of analytical and experimental techniques.

RESEARCH ACHIEVEMENTS

I research functional materials that undergo large reversible changes in temperature under application of pressure, and that can therefore be used for the purpose of refrigeration, air-conditioning and heat pumping. With my research I have demonstrated that inexpensive organic materials can be used as a more efficient, environment-friendly and compact alternative to vapor compression technology. This discovery has led to a filed patent with Cambridge Enterprise, and an Innovate UK - EPSRC funded project for the development of a cooling prototype based on my materials, in collaboration with Beko, the largest household appliance manufacturer in Europe.

Joachim Dias

Department of Materials Science and Metallurgy

I was born in Paris and I grew up in Brussels. I pursued an undergraduate degree in Materials Science at Imperial College. My interest for this field led me to pursue a masters in Cambridge, where I met my PhD supervisor, Harry Bhadeshia. During my PhD, I have designed, modelled, produced and characterised a new type of steel, which possesses a microstructure that can allow it to achieve an unmatchable combination of properties: high strength and ductility, and resistance to hydrogen embrittlement. In the future, I hope to use my knowledge in materials science and the analytical skills developed throughout my PhD to design more novel materials that can have positive impacts in the world.

RESEARCH ACHIEVEMENTS

Steel, the most widely used alloy in the world, is dramatically susceptible to hydrogen embrittlement. Hydrogen causes cracking of alloys much below their fracture strength, leading to critical safety issues and financial losses for the bearing, nuclear and petroleum industries. The mechanical performance of hydrogen-resistant steels has recently reached a plateau due to their crystal structures' inherent limits. My Ph.D. investigates a new structure, bainite, which can outperform commercial alloys. Two microstructural features inducing hydrogen resistance in bainite have been identified: a tortuous austenitic structure and carbides that trap hydrogen. This research could inaugurate a new class of hydrogen-resistant steels.

Vera Graup

Department of Materials Science and Metallurgy

I am currently completing my PhD in Materials Science and Metallurgy. My background is a doctorate in clinical medicine and a masters in nanotechnology. My PhD focuses on the re-creation of the extra-cellular matrix of the human heart. These recreations can be used as 'scaffolds' in tissue engineering to create pieces of heart tissue. These tissues can be used for implantation after heart attack or as an in vitro model of the heart for drug testing and disease detection.

RESEARCH ACHIEVEMENTS

My PhD project focuses on the development of a plaster for the human heart. This plaster is made of collagen and provides a three-dimensional, tailor-made living environment for human, stem-cell-derived heart cells. Once populated with these cells the plaster can be implanted into patients, who suffered a recent heart attack. Subsequently, the plaster will limit scar formation and aid the healing process, thereby improving the clinical outcome of patients.
This project is a collaboration between Materials Science, Regenerative Medicine and Biochemistry. The focus of my part of the project is the three-dimensional design and material modification of the plaster.

Chen Jiang

Department of Engineering

I am a four-year PhD student in the Department of Engineering, University of Cambridge, under supervision of Professor Arokia Nathan. Prior to enrolling at Cambridge, I did my undergraduate degree in Electrical Engineering with a minor in Applied Mathematics at Shanghai Jiao Tong University, in 2010-2014. After that, I was awarded a CSC Cambridge International Scholarship for my PhD study on electronic devices, specifically on low-cost low-power organic thin-film transistors and high-gain amplifiers for wearable applications. My ambition is to become a global scientific leader and an innovative professor, who will help to lead future developments in the sciences and transfer research findings into industrial production.

RESEARCH ACHIEVEMENTS

Wearable electronics has enabled devices that can monitor humans in real time for continuous healthcare management. For broader applications, organic electronics offers significant advantages over conventional silicon technologies, due to the intrinsic bendability and versatile sensing functionalities of organic materials. However, wearable electronics relies on batteries and calls for cheap and disposable devices. To fill these gaps, I have developed bendable organic transistors with ultralow power consumption (<0.1% in conventional approaches) and little fabrication cost (approximately 2p/chip). My findings in a series of publications have indicated the exceptional capability and potential of this research for emerging wearable physiological monitoring applications.

THE WINNERS

Jan Lyczakowski

Department of Biochemistry

I have completed my Bachelor's degree in Biotechnology at the University of Edinburgh in Scotland. After graduating I have moved to Cambridge to study for a PhD as part of the BBSRC Doctoral Training Partnership. After completing two rotation projects, I have started my PhD research supervised by Prof. Paul Dupree at the Department of Biochemistry. My main research interest is understanding and changing the structure of plant biomass to make it easier to digest to simple sugars. Obtained monosaccharides can be fermented to biofuels and other products. Majority of my PhD has focused on understanding the molecular features which make biomass hard to digest and characterising conifer enzymes involved in biosynthesis of the recalcitrance determining factors. Currently, I am interested in developing synthetic biology tools which would enable specific engineering of wood structure in trees. After completion of my PhD I would like to continue a career in academia focusing on plant biomass genetic engineering.

RESEARCH ACHIEVEMENTS

Sustainable provision of food and energy to the growing population is one of the greatest challenges of this century. Plant biomass, a renewable resource providing nutrition and bioenergy, is recalcitrant to degradation, posing challenges for biofuel applications. I have discovered that a single modification of a cell wall polysaccharide xylan triples the efficiency of biomass processing and doubles the biofuel yield obtained from it. My work is first to report such advances in improving the biomass without reducing plant growth. I have also characterised a softwood enzyme generating these recalcitrance-determining structures, hence providing a target for genetically improved forestry crops.

Elizabeth Moore

Cancer Research UK

I am a gynaecologist and a Clinical Research Fellow in gynaecological oncology. I was the first recipient of the highly prestigious Target Ovarian Cancer/Medical Research Council Join Research Training Fellowship. My PhD work has focused on developing a combination of sequencing assays (targeted sequencing and shallow whole genome sequencing) with an improved sensitivity for detection of circulating tumour DNA in women with newly diagnosed, including early stage, high grade serous ovarian cancer. Once completing my PhD I plan to combine ongoing clinical training with a post-doctoral fellowship. This will be based around two large clinical studies focusing on further development of liquid biopsies for use in ovarian cancer where there is a strong clinical need for new diagnostic and predictive biomarkers.

RESEARCH ACHIEVEMENTS

The majority of women with ovarian cancer have widespread disease at diagnosis, fewer than 20% will survive 5 years. Conversely over 90% of women with localised disease will survive over 5 years. New diagnostic biomarkers enabling earlier detection are urgently needed. I have developed sensitive molecular profiling methods to detect tumour DNA in blood from women with newly diagnosed, including localised, ovarian cancer. I am establishing a clinical study with large cohorts of symptomatic women. If sensitivity and specificity are promising these methods could be transferred to primary care to triage symptomatic women, leading to earlier diagnosis and saving lives.

Craig Pearson

Clinical Neurosciences

I am pursuing a PhD in clinical neuroscience as a Marshall and NIH-Cambridge Scholar. As an undergraduate at Michigan State University, I studied neuroscience, biochemistry, and English literature. My research at the University of Cambridge seeks to regenerate the neurons that connect the eye to the brain, by using a human enzyme to modify proteins that block neuron growth in the optic nerve. My interest in the visual system has led me to pursue a career as a physician-scientist, with a focus on treating -- and someday curing -- various forms of blindness.

RESEARCH ACHIEVEMENTS

Injuries to the spinal cord and optic nerves can cause paralysis and blindness. The failure of these nerve tracts to regenerate is partially due to proteins that accumulate after injury, forming "scars" that seal wounds but also block regenerating nerve fibers. I study an enzyme that modifies the structure of these proteins, making them less inhibitory to nerve cells. In mice with injured optic nerves, delivering this enzyme enables neurons from the eye to grow through the "scar" toward the brain. Administering this enzyme in combination with other treatments could help us regenerate visual and sensory pathways in human patients.

Luca Peruzzotti-Jametti

Clinical Neurosciences

After receiving my medical degree from the University Vita-Salute San Raffaele, Milan (Italy) (2007), I started my residency in Neurology working in the Department of Neurology and in the Neuroimmunology Unit at San Raffaele Scientific Institute, Milan (Italy). During this period, I participated in several clinical trials on central nervous system diseases and focused my research on stem cell therapies. I received additional training at the University Hospital in Zurig (Switzerland), at the Institute of Anatomy, University of Aarhus (Denmark) and at the Laboratory of Stem Cells and Restorative Neurology, Lund (Sweden). After receiving my CCT in Neurology, I recently completed a PhD in Clinical Neurosciences at the University of Cambridge (UK) as Wellcome Trust research training fellow.

RESEARCH ACHIEVEMENTS

The majority of people with multiple sclerosis (MS) develop a secondary progressive form of disease characterised by irreversible accumulation of damage and disability. My PhD research has been focused on developing a novel source of neural stem cells, which can be obtained directly from skin cells of affected individuals. I have shown that directly induced neural stem cells can heal mouse models of progressive MS by turning down the detrimental activation of immune cells and replacing the cells that wrap the damaged nerves. These findings open a new era of personalised stem cell medicines for progressive MS patients.

Oliver Taherzadeh

Department of Geography

I am interested in how consumption and production decisions connect different actors within the global economy. My PhD explores these linkages to better understand the influence and exposure of countries and sectors in relation to environmental risks. My awareness of and interest in sustainability evolved during my work as a researcher at the Stockholm Environment Institute. Here, I worked across several projects aimed at improving policy coherence and stakeholder accountability around sustainable resource use in international supply chains. Working at the interface between science and policy has motivated me to align my PhD research in response to key knowledge gaps surrounding individual, corporate and national sustainability commitments. Using the CSAR award, I will develop a decision support tool to help consumers, businesses, and governments identify and adopt ambitious sustainability practices.

RESEARCH ACHIEVEMENTS

Decisions concerning resource use can have knock-on effects on other environmental systems in profound and often unintended ways. Energy policies to curtail carbon emissions can increase water and land use; water-efficiency measures can increase energy demand; and, land use policies can exacerbate climate change and its impacts on water availability. To avoid problem-shifting between water, energy, land, and the climate system, my research aims to deepen understanding of their interactions. By modelling the environmental burden of over 25 million supply chains within the global economy, my PhD provides an evidence base for policy makers to promote integrated sustainable resource management.

Tiesheng Wang

Department of Materials Science and Metallurgy

I received my BEng in Materials Science and Engineering from Imperial College London and MRes in Sensor Technologies and Applications from the University of Cambridge. I am currently a PhD candidate and China Scholarship Council (CSC) scholarship holder in the Department of Materials Science and Metallurgy at the University of Cambridge. I am under the supervision of Dr Stoyan K. Smoukov and Dr R. Vasant Kumar and working closely with Professor Anthony K Cheetham. I am also affiliated with the Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training in Sensor Technologies and Applications. I am developing materials inside nanopores and multifunctional materials with interpenetrating structures that can benefit sensing, energy storage, and catalysis.

RESEARCH ACHIEVEMENTS

I am working on functional materials with interpenetrating structures that can benefit sensing, energy storage, and catalysis. Recently, I have developed a free standing, flexible supercapacitor electrode from an interpenetration of an electrically conductive polymer and an ionically conductive polymer (a.k.a. candy cane supercapacitor). Together with my supervisor, Stoyan K. Smoukov and a master student, Kara Fong, we have showed the material not only significantly increase the electrochemical active interface for storing charge but also enhance the mechanical robustness and long-term cycling stability. We are working with Cambridge Enterprise (ref: Smo-3466-1) to exploit the commercial aspect of the invention.

The Shortlist

THE SHORTLIST

Cristina Acasuso-Rivero
Department of Veterinary Medicine

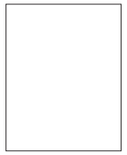
I study the interactions between human and non-human animals; currently, investigating dolphins. My work is based on the urgent need for fairer interactions with other species, with a detailed evaluation of their welfare states. By analysing their perception, cognition, and emotions, I improve the understanding of their needs and desires as a species and as individuals. I act as a buffer between (extreme) standpoints, counselling for management plans and prospective laws. The project relies on me, but it is only possible thanks to the guidance of my supervisors, the support of ~150 caregivers, and the cooperation of ~100 dolphins.

Evangelia Agapaki
Department of Engineering

The cost of modelling existing industrial facilities currently counteracts the benefits these models provide for maintenance and retrofit of these assets. 90 % of the cost is spent on labor for converting laser scanned data to 3D models: hence cost reduction is only possible by automating this step. How can we automatically detect and classify the most important industrial objects? The merge of deep learning and plant design is my research focus to facilitate industrial facility management. My work was awarded with the first prize at the LC3 International Innovation Competition and the 4th Oxbridge Women in Computer Science Conference.

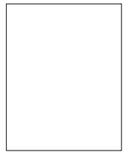
Hanwei Fu
Department of Materials Science and Metallurgy

Bearings, being amongst the most vital steel components in modern machinery, are prone to rolling contact fatigue. During my PhD study I have proposed a novel theory to describe the mechanism of bearing fatigue, which solves the key problems that have puzzled researchers for more than 70 years. The modelling results were compared with experimental observations obtaining very good agreement. The research has been published in a top journal in the field and the proposed models can be directly applied to bearings to accurately predict damage evolution and life, potentially improving their resistance to fatigue in this €30bn/year industry.



Nicholas Gleadall
Department of Haematology

In England, over 7,000 blood transfusions are performed each day. To ensure the safety of a transfusion it is critical to identify both donor and patient blood groups. Current antibody based typing methods are successful, however typing reagents for rare blood groups are often expensive, unavailable or unreliable. I have developed a cost effective, high throughput, DNA based method for identifying human blood groups. This platform can be used to identify all blood groups of an individual in one test, allowing blood bank organisations to save money, improve patient care and prevent complications due to mismatches between donors and recipients.



Viola Introini
Department of Physics

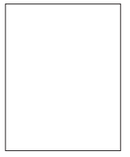
Malaria is a devastating health problem and socio-economical burden in more than 100 countries, infecting more than 300 million people worldwide, and killing nearly a million every year. Facing continual emergence of drug resistance, the search for a viable vaccine is urgent, and success depends on a better understanding of the interactions between parasites and human erythrocytes. Dantu phenotype, a rare erythrocyte condition present in Kenya, shows strong natural resistance against malaria. In collaboration with laboratories in Cambridge and Kenya, I investigate the molecular and biophysical origin of such resistance, to develop an effective treatment for the malaria disease.

Asiya Islam
Department of Sociology

My research is primarily concerned with young women's participation in paid work in Delhi, India. While India's economic growth, particularly in urban areas, was expected to lead to higher female labour force participation rate, only 27% of women in India are in employment. For my fieldwork, I spent a year with young working class women in Delhi to qualitatively understand the motivations for as well as hurdles to being in paid work. My findings are unique because of this qualitative approach and can be developed into initiatives to support young women in getting into paid work in urban India.

Nicholas Jose
Department of Chemical Engineering and Biotechnology

Nanoengineered materials can significantly reduce global problems like climate change, resource scarcity, and poverty. However, our inability to efficiently produce large quantities severely limits their real-world application. Instead of the conventional heuristic approach, my methodology uses physical models, obtained through advanced in situ experiments, to rationally design scalable processes. This approach yielded a novel reactor design (currently being patented) for the industrial-scale production of nanomaterials that can be used in energy storage, chemical catalysis, and medicine. I aim to commercialize this technology in a spin-off, and would use the CSAR award to fund visits to potential customers and collaborators.



Cheng-Yen Lao
Department of Materials Science and Metallurgy

Energy storage (ES) is a key factor to ensure growth in renewable energy generation. Without sufficient ES, 15-20% of intermittent clean energy is not fully utilised annually. To address this issue, my research focuses on practical and sustainable potassium-ion batteries (KIBs) since the current batteries can have economic and environmental burdens. I have developed electrospun biomimetic membranes to efficiently harness and release energy during batteries cycling. This successful demonstration heralds a cheaper and greener approach to large-scale ES. I am currently investigating with CamShield Hi-Tech in the mass-production of this natural-inspired membranes to make commercial KIBs as next generation ES.

THE SHORTLIST

Theresa Maier
Department of Chemical Engineering and Biotechnology & Paediatrics

My research focuses on the development of a novel oral therapeutic delivery system to enable medicine administration to infants during breastfeeding. It consists of a silicone nipple shield, containing a therapeutic insert. When placed on the mother's breast during feeding, medicine is delivered to the infant by human milk. The system could significantly improve therapy in low-resource settings, where clean water for administration is not readily available, and in neonatal special care environments to foster mother-infant bonding. I am developing the system at the Chemical Engineering Department, and evaluating its clinical feasibility through research at Addenbrooke's Hospital/ the Paediatrics Department.

William H Marks
Department of Medicine

4.73 million infants die annually from treatable and preventable illnesses. My research focuses on developing a novel device to deliver medicines to infants during breastfeeding; with the potential to prevent infant mortality by removing obstacles, such as cold-chain storage and available potable water, to lifesaving treatments for millions of infants worldwide. Exemplifying interdisciplinary research, I have bridged the gaps between medicine, engineering, physics, and pharmaceutical sciences to bring this device much closer to real-world usage and the opportunity for a clinical trial, and I developed key collaborations with research and clinical groups throughout Cambridge, Addenbrookes, and Trinity College Dublin.

Jolyon Nicolas Edouard Martin
Wellcome Trust Sanger Institute

Within my PhD under Prof Allan Bradley at the WTSI I have been building (and have a patent pending on as co-inventor with Prof Bradley) a transgenic mouse that generates therapeutic quality canine antibodies. Dogs suffer from many of the same diseases we routinely treat with antibodies in people, but the huge potential of this therapeutic class has yet to be realised in veterinary medicine due to the species-specific nature of these drugs. This platform builds on a human approach that has yielded approved therapies, and this award would allow me to travel to present my work and seek investment.

Abeyakoon Oshaani
Department of Radiology

Optoacoustic imaging is an emerging radiation free, low cost technology, which can non-invasively measure blood and oxygenation in tissues. In cancer these are altered and associated with adverse outcomes. I took this technology from the mouse-lab and applied it to enhance the current imaging strategies of breast cancer. The prototype system naïve to breast imaging was refined while performing studies on healthy volunteers and patients to create a map of normal, disease states and validate measurements. It has now reached a sensitivity of 96% and specificity of 86% for breast cancer. It can help diagnose cancer and reduce biopsies worldwide.

Ridhwaan Suliman
Applied Maths and Theoretical Physics

When will aircraft wings experience flutter? Can we harvest energy from the motion of wind or vibration of structures? Why do birds flock and fish swim in certain patterns? These are all complex questions involving multi-physics systems, but with the common thread that they contain thin structures vibrating due to fluid flowing around it. In my research I have developed and implemented mathematical models to study these systems. Our state-of-the-art computational tool allows us to provide accurate answers to the questions above. This will not only enable engineers to design better aircraft but also provide alternative solutions for sustainable energy.

Eleanor Tew
Department of Zoology

A third of global forest cover is managed for timber production, but disease and climate change threats have already resulted in losses of entire forests. My research is identifying how we can balance the economic needs of commercial forestry while maintaining resilient and functioning ecosystems. I am quantifying the ways in which forests can deliver the full range of ecosystem services including climate regulation, clean water, timber and recreation alongside biodiversity conservation. My research is reconciling trade-offs to form practical management recommendations. In collaboration with the Forestry Commission, my work is already directly informing the management of Thetford Forest, UK.

Tsung-Hsien Wen
Department of Engineering

My Ph.D. work focuses on deep learning for dialogue systems so that machines can learn to converse with humans via natural language. Specifically, I designed a neural network architecture that learns its conversational capabilities directly from human examples. In addition, an advanced Wizard-of-Oz data collection mechanism was introduced to enable quick collection of dialogue data. It has been proved that this methodology can be used to build a conversational agent that is substantially more cost-efficient and user-friendly than the alternative approaches. My work has had major impact in the community, including seven top conference publications and two best paper awards.

Tien-Chun Wu
Department of Engineering

"Breath analysis using mobile/or wearable devices may allow early detection of a wide range of diseases instantly, remotely and painlessly. This would save massive healthcare costs and revolutionise disease diagnostics. I have developed a novel inkjet-printed graphene-based sensory system that can be integrated onto miniaturised CMOS-compatible platforms to selectively measure ammonia, a biomarker of liver metabolism and stomach cancer, at sub-ppm level with fast and accurate performance. Specific diseases may be identified using pattern recognition algorithms. The versatile inkjet printing technology enables multi-analyte sensors to be fabricated reliably and cost-effectively, offering new routes towards the development of multi-disease diagnostics platforms."

PREVIOUS WINNERS

Award winner Evan Miles meets the then Vice Chancellor of the University of Cambridge. Sir Leszek Borysiewicz

EVAN MILES | CSAR WINNER

Evan Miles was one of the first winners in 2013. The award enabled him to travel to Nepal for 6 weeks in May and June, 2013, to conduct preliminary fieldwork for his PhD, which examines the dynamics of lakes that form on top of debris-covered glaciers. These lakes can grow to enormous proportions as glaciers retreat and threaten to flood villages as far as 200km downstream when they outburst. During his trip, Evan was able to measure ice melt rates, survey lake geometry, and install meteorological sensors to assist in modelling the evolution of the glacier's surface and the formation of lakes.

"These measurements make up a unique and difficult to obtain dataset that will strongly inform how we assess glacier hazards in high mountains."

FIONA STROBRIDGE | CSAR WINNER

"When I was awarded the CSAR bursary this year, I used the money to go towards my trip to Argonne National Laboratory, just outside Chicago. I was carrying out two, weeklong experiments at the national facility, The Advanced Photon Source, in order to gain unprecedented insight into a promising cathode material, LiFePO4, which has received a lot of attention for use in lithium ion batteries for electric vehicles.

Luck must have been on my side, as President Barack Obama announced he was to give some "remarks" about his support for clean technology directly outside my office and then use my office as his "preparation room" for his visit.

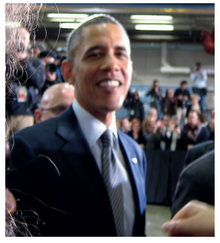
It was incredible. As the week passed, more and more items were brought into the office, all of which had "POTUS" written on them (The President of the United States) and had the presidential seal. It was exciting to see the behind-the-scenes work and the necessary preparations for just a 50 minute appearance.

Seeing him talk was really inspiring. He brought with him the most calming atmosphere. Hestarted with a joke about us staying standing after he entered and asked if we couldn't afford chairs after the sequester, which went down with a laugh. He must have thought we were a quiet crowd as at one point he said, "yes, I think that deserves an applause", so then the room erupted with applause.

It was quite a small audience, so when he finished I rushed to the front to get a handshake and even though I was in the second row, I stretched my arm out in hope he could see me. I didn't expect him to shake my hand, but when he did, he looked at me expectantly as if I should've said something, so I panicked and all I could muster together was "thank-you" in a very meek mumble tone.

The whole experience was amazing. Hearing him talk about electric vehicles and the drive away from combustion fuel vehicles was really enthusing. I feel so lucky to have been given this unique opportunity."

Award winner Fiona Strobridge



Fiona's photo of Barack Obama

For more information about previous winners, please visit:

www.csar.org.uk/student-awards

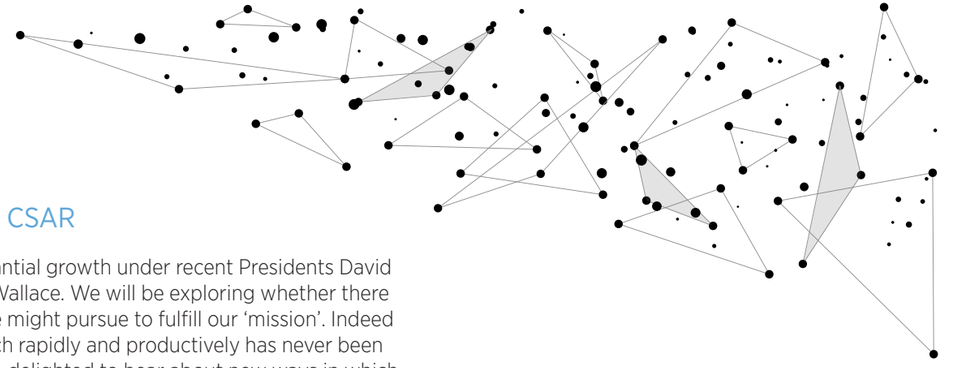
CSAR | NETWORKING THE EASY WAY

"Following the CSAR visit we set up a meeting with the scientist who had led the visit and an extremely useful collaboration between our two companies ensued."

CSAR is not just student awards and lectures. We endeavour to make time around all events for people to meet, talk and network. Lectures are usually held at Churchill College where there is ample parking for those coming from outside Cambridge. Lecture attendees can have dinner in the college canteen joining other attendees and the speaker over a glass of wine. Coffee and biscuits are served before lectures, and if the lecture needs to be discussed or debated further, this is usually done in Churchill's bar. Recent speakers have included Billy Boyle (co-founder Owlstone Medical), Dr Demis Hassabis (co-founder and CEO of DeepMind, Vice President of Engineering at Google DeepMind), Dr Hermann Hauser (co-founder and Partner, Amadeus Capital Partners), and Dr Menelas Pangalos (Executive Vice-President, Astra Zeneca).

Visits are interesting and informative and can initiate useful links between different companies. The recent visit to Huxley Betram Enginneering was described as "fascinating" and "utterly absorbing". Other visits have included Airbus Defence & Space, TWI, e-Go Aeroplanes, Cambridge University Botanic Gardens and The Sainsbury Laboratory, TTP, and Carl Zeiss.

"What an utterly absorbing morning we had. The experience of seeing multi-disciplinary science in action was a delight, be it the engineers, the software gurus or the designers. It was also most rewarding to see a two-man enterprise thriving and carrying out work for customers on a global scale; William and Stewart must be very proud of their achievements, and justifiably so."



WHERE NEXT FOR CSAR

CSAR has enjoyed substantial growth under recent Presidents David Adamson and Sir David Wallace. We will be exploring whether there are new activities that we might pursue to fulfill our 'mission'. Indeed the need to apply research rapidly and productively has never been more acute. We would be delighted to hear about new ways in which we might help encourage and bring together younger members of the Cambridge academic and industrial 'ecosystem' with interests in the application of research.

MORE INFORMATION

To find out more about CSAR, and to keep up to date with our latest events, please visit our website:

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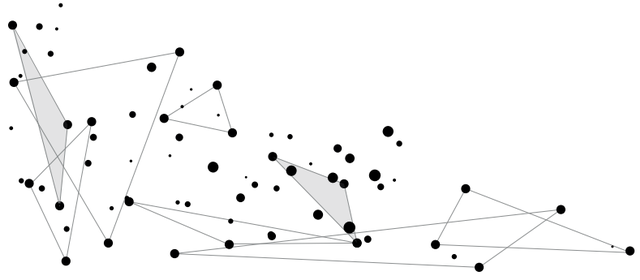

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