THE STACEY FUND?

The School of Biosciences established the Stacey Fund in 2012 to provide financial support for undergraduates to experience research or other research/enterprise-related activities either in the School or elsewhere (UK or overseas). The Fund was named to honour the memory of Professor Ken Stacey, the ‘Founding Director’ of the School of Biosciences (then known as The Biological laboratory). Support provided by the Fund allows us to continue Ken’s lifelong commitment by inspiring young scientists to gain career-building experiences over and beyond what is offered by their degree programme.

The ethos of the Stacey Fund is to provide needy financial support for our undergraduates irrespective of their degree programme or financial background although preference is given to students from a low income background. In the six years since its launch, the Stacey Fund has helped support a number of our students, by providing them with unique opportunities to develop their skills and broaden their experiences.

This report shows how funds received so far have been distributed, exemplifying the value to the students and their overall ’student experience’ as a Kent student.
INTERNATIONAL EXPERIENCES

In 2015 the Stacey Fund supported Amy Gallimore on the trip of a lifetime during her summer vacation. Working with the British Exploration Society, Amy explored the plant and animal species of the Amazon jungle. Amy funded part of this trip herself through sheer determination via fund raising, begging letters and car boot sales. With Amy’s commitment to fund raising, the Stacey Fund was able to step in and help Amy with the remainder!

During the course of the expedition Amy learned to cope with carrying out research in a physically strenuous environment while also enjoying the challenge that each day presented, from sleeping in a tent in hot humid conditions or a hammock under the stars, to lighting fire which helped keep her boots dry for the activities of each day! The most important element Amy learned from her trip was to recognise her own ability and aptitude for the strains of a field-based research career: something she had always aimed for, but previously had not felt confident in pursuing.
SUMMER VACATION RESEARCH EXPERIENCES

Many of our undergraduate students wish to find out what it is like to work in a research laboratory, but do not have the financial resources to do so. The Stacey Fund has now helped a number of students to do just this and here are just three examples:

Rejina Khan

Rejina Khan worked with Rosalyn Masterton the School’s Senior Laboratory Demonstrator. To assist fellow students in fundamental techniques and using key equipment, Rejina generated demonstrational video resources linked to QR codes. These videos are now available on-line and the QR codes have been attached to relevant equipment and incorporated into practical class manuals. This new resource is having a wide impact on our undergraduate’s ‘learning experience’.

Chloe Johnson

Chloe Johnson worked in Professor Mike Geeves’ laboratory studying the thermal stability of yeast tropomyosin mutants. The aim of the project was to understand why mutations, discovered more than 20 years ago, stop yeast cells from dividing, but only above a certain temperature. Chloe expressed the normal and mutated proteins in bacteria, purified them and then measured the thermal stability of the proteins. She discovered that the mutated protein unfolds and is inactive at temperatures where the normal protein is stable.

Alisha Ockenden

Alisha Ockenden worked in the Kent Fungal Group under the guidance of Dr Alessia Buscaino. Alisha used viability and morphological assays to investigate the functional pathways of the histone deacetylase complex in the fungal pathogen Candida albicans. By assaying mutants of Candida albicans lacking these histone deacetylases, on a variety of different substrates, Alisha was able to determine the growth and filamentation pathways that this important enzyme complex functions in.

Update

In 2018 we formally launched the ‘Stacey Fund Vacation Studentships’ and three awards have been made. Each student will spend 8 weeks over the summer carrying out research in one of our laboratories.
THE IGEM EXPERIENCE

Over the last four years the Stacey Fund has provided bursary support and travel costs that has helped a team of undergraduates from the School to enter the ‘International Genetically Engineered Machine’ competition. This global competition, otherwise known as iGEM, was initiated by Massachusetts Institute of Technology (MIT) in Boston and is the world’s premier synthetic biology competition, encouraging students to develop and test innovative solutions to global problems.

The School’s first iGEM team was formed in 2013, under the expert guidance of Drs Wei-feng Xue and Mark Shepherd. Over the summer they developed an environmentally-focused project which aimed to detoxify water and soil from nitric oxide (NOx) pollutants, and to convert pollutants to useful products using the bacterium Escherichia coli. After presenting their results at the European iGEM Jamboree in Lyon in France, the whole team flew out to Boston in the USA where they had the chance to present their project to other students from across the globe and the opportunity to meet with new start-up industries. The result was a highly commendable Bronze medal.

In 2014 the Kent iGEM team developed a project on the biosynthesis of fragrant terpenoids in E. coli. The team managed to obtain support for the project from Givaudan, a world leading fragrance company in nearby Ashford, who were able to supply a range of essential oils to be used as standard samples. Some members of the team constructed new ‘biobricks’ that encoded for terpene synthase enzymes and expressed them in E. coli while other team members carried out homology modelling and industrial scale-up modelling as well as engaging with policy and practice activities. The outcome was another Bronze medal at the iGEM Jamboree in Boston!

Our 2015 iGEM team developed a research project entitled ‘Envirowire’ that set out to investigate the feasibility of generating functional amyloid nano-wires (see ). Nano-wires formed from proteins by bacteria provide a potential solution in the fabrication of biologically- and clinically-applied circuitry, with benefits including miniaturisation, improved efficiency, biocompatibility and use of renewable sources of energy and materials. Working with students from the School of Engineering and Digital Arts and the School of Physical Sciences, the students were able to combine biological experiments and analysis with computing-based modelling approaches, presented their cross-disciplinary research in Boston alongside over 2,700 participants and 280 teams from Universities all around the world. The outcome – a Gold medal – alongside teams from world-leading institutions including the universities of Cambridge, Tokyo and Sydney.

The latest iGEM team (2017) developed a project to look at a new way of using CRISPR technology to visualise the position of specific messenger RNAs in cells. The team, which also included students from the Schools of Physical Sciences and Electronics and Digital Arts, won a bronze medal and ‘Best Poster’ award.
There is no doubt that the ‘iGEM experience’ has had a profound, life-changing impact on the lucky team members as is evident from their comments:

“I have had so much fun! Yes it has been frustrating at times in the lab, and things have not always gone well but I have gained so many new life skills and met so many amazing people that I feel very humbled to have been able to be a part of it all, and think that the iGEM experience is the best scientific experience you can obtain throughout your time as an undergraduate at university by a mile.”

“It was a really positive experience and I feel that I have learned a lot from the project. I believe that it provides students with some extremely useful skills both inside the lab and outside. It also gives insight into the scientific community and the chance to experience an international conference, which I have found to be incredibly interesting and useful. I would highly recommend the iGEM project and would seriously consider further involvement in the future.”

“It has really opened my eyes to the science community. In particular to the side of science outside the lab such as marketing, presenting, and communicating. Whilst I am still unsure of career choices, I would definitely consider a job in science communications as a result of the project. I would also maybe consider becoming an iGEM advisor in the future as it’s really good experience and I would like to be involved in iGEM in the future.”

“It has shown me that I do want to go into science. iGEM is more than just a summer lab project, it has provided me with a number of multi transportable skills that are not just science based, that could be taken into any discipline and applied, as well as allowed us as a team to take ownership of a project that is ours from the start to finish is very satisfying and has given us a lot of management skills along the way.”

“On top of the scientific investigation, we had to be able to relate your project to the wider world and translate it to the public and to policy makers, construct posters, presentations and brand your idea to make it marketable. The iGEM has been more than beneficial to my academic ability. The project itself has just reinforced my ambitions to pursue a career in research; I really do love the work, and I was very grateful to be supported by the Stacey Fund.”

“The Stacey Fund helped make my participation possible. It meant that I could take part in this enlightening project and witness what working in a laboratory would be like. I would probably not have taken part in the iGEM competition if it was not funded, as I would not have been able to afford to stay in Canterbury over the summer to carry on the work. The laboratory experience helped me confirm my career choice and secured me a place at a medical school... It has always been my dream to be a medical doctor, since I was a child”.

1-2 iGEM supervisors Drs Wei-feng Xue and Mark Shepherd
3 iGEM team 2014
4 Gold winning 2015 iGEM team
5 iGEM team 2016
6 iGEM team 2017
The Stacey Fund has also been used to help enhance the overall student experience in relation to dealing with mental health issues. In particular, the incidence of acute anxiety within our undergraduate student population rises year by year and it is important that the School as well as the University reacts to this emerging problem by providing as much support as it can. Normally the School has supported such students in house via informal meetings with our nominated Welfare Officer Dr Lis Curling. In 2016 however, following a generous donation to the Stacey Fund by the grateful parents of one of our undergraduates, Lis set up a new line of support by establishing a pioneering programme of bespoke mindfulness sessions. With the help of Lorraine Millard, a tutor and trainer in integrative psychotherapy and mindfulness, these Stacey Fund-supported sessions have been piloted for both second and final year undergraduates and there have already been some strong testimonials from students who have attended the ‘Mindfulness Sessions’:

"...It was a great opportunity to meet new people and develop a new skill that can be used throughout life. Before joining the mindfulness programme I often felt overwhelmed and anxious about the workload and pressure of university life. The mindfulness sessions taught me how to focus my concentration and to be more in the present. Since finishing the sessions, I have seen great improvements in the way I work. For example, I stress less about the work that needs to be done. I have made great new friendships with the people from the sessions. Mindfulness is something I will continue to practice. It has made a big difference in my life..."

"...I get incredibly anxious, more so than normally, and don’t go outside for days at a time. To try and combat this, I’ve been going to weekly mindfulness sessions organised by Dr Curling together with the very experienced mindfulness tutor Lorraine Millard, designed to reduce stress and anxiety, to improve focus and memory, to cultivate happiness and satisfaction and an overall feeling of well-being. I am proud to say I managed to attend all sessions and receive a certificate. Employers nowadays love to hire people experienced in mindfulness (so that’s a major plus) and I’m happy to say I have already benefited from my sessions greatly. Ultimately, if you feel like it’s necessary we can have a more personal chat, face to face. Otherwise, if I make you a promise to attend all lectures from now on, with the help of mindfulness practice, I can hopefully sort my life out once and for all and be on a positive path for once. Thank you for always being there..."
Besides providing the supporting for the various experiences outlined above, the School of Biosciences also celebrates Ken Stacey’s contribution to the School through the Stacey Symposium. At these symposia we engage with our alumni, some of whom will have known Ken, many others who may be just aware of his legacy, as well as other friends of the School together with the Stacey family.

To date there have been four Stacey Symposia:

1st Stacey Symposium, September 2010
Held to coincide with the naming of the Stacey Building and marked a very important landmark in the history of the School of Biosciences. Speakers were both current and former academic colleagues from across the UK talking about their latest science.

2nd Stacey Symposium, Sept 2011: Kent women in (bio)sciences
Where the speakers were eight of our female alumni ranging from recent graduates to through alumni who have gone on to hold Chairs or high ranking executive positions in the UK. The latter included Professor Anne Willis (now OBE), a former undergraduate and now Professor and Director of the MRC Toxicology Unit at the University of Leicester, and Dr Lesley Thompson (now MBE), a former postdoc in the School and now Elsevier's Director of Academic and Government Strategic Alliances in the UK. Dr Naheed Kaderbhai from the University of Aberystwyth, who graduated from the very first cohort of Biosciences’ undergraduates at Kent, also spoke.

3rd Stacey Symposium, April 2013: Careers outside the laboratory
Where a number of former staff and students of the School described how their careers ‘outside the laboratory’ have developed since leaving Kent. The invited speakers came from a variety of backgrounds including industry, teaching, university administration, government and medicine. It was at this symposium that we formally launched the Stacey Fund.

4th Stacey Symposium, Sept 2015: Biological Sciences at Kent: the next 50 years
To help the University of Kent celebrate its 50th birthday the focus of the latest Stacey Symposium was on the future for the School of Biosciences. Consequently the speakers at the symposium were all recently appointed staff from the School who provided a forward look, not only emphasising their research ambitions, but describing how these will shape the School’s research for the ‘next 50 years’.