



# Decade

Celebrating 10 years of research  
at the University of Northampton



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# Vice Chancellor's welcome

2015 marks the 10th anniversary of the University of Northampton achieving full University Status and Research Degree Awarding Powers. In the last decade we have become one of only nine UK universities in the top 30 for both student satisfaction and employability, while maintaining our core commitment to student experience, social enterprise, accessibility and diversity. These areas are underpinned by the University's high quality research and I am delighted to write the introduction to celebrate these impressive endeavours.

By historical coincidence, 2015 also marks the 750th anniversary of the abolition of the first University of Northampton as one of three ancient seats of learning (the others being Oxford and Cambridge). Research about this significant ancestry can be found on page 6.

In 2014, the University received the outcome of the UK-wide Research Excellence Framework. This showed that we are producing world-leading research in six of the nine areas submitted and internationally-recognised research in the remaining three. We also submitted a larger number of academic staff compared to the last national assessment in 2008 and were ranked higher nationally for the quality of our research overall.

This is a fantastic achievement in light of our short period of time as a modern University and testament to the hard work by academic and professional services staff committed to supporting research

across a range of subject areas and within professional departments. This publication outlines examples of our world-leading and internationally-recognised research and introduces our ambitious 2020 research plan that builds on our positive trajectory.

I hope you enjoy this review and stand by our ambition to make sure our research base transforms lives and inspires change in Northamptonshire and beyond.

**Professor Nick Petford DSc**  
Vice Chancellor and CEO





## The Future of Research

In this publication we are celebrating some of the great research we have done at the University in the last 10 years. There is no doubt that we punch above our weight with our research and the way we, and others, apply it makes a positive difference.

What of the future though? What will we be writing in the 20th anniversary publication about our research?

Put simply, in 2025 the Director of Research, Impact and Enterprise will report that we have seen a significant increase in the amount of high-quality, high-impact research produced by the University of Northampton. We can be confident about this prediction because of the work that has been done, in 2015, to prepare us to deliver the Changemaker Challenges.

In the Strategic Plan for 2015 – 2020 we have put great emphasis on social impact: doing things that help both people and the environment. Uniquely for a university in the UK, we have also committed to working with local partners to make positive differences to Northamptonshire in the key areas of Health and Wellbeing; Education; Culture, Heritage and the Environment; and Enterprise and Innovation. These four Changemaker Challenges will see us working with local authorities, the NHS, schools, businesses, the community

and voluntary sector, and the people of our county as we seek to improve Northamptonshire. The Challenges will give opportunities for our students to do interesting and relevant work placements as part of their degrees, and help create the jobs that will attract more of our graduates to stay and work in the county.

The four Challenges all depend on research. We need to know the starting point for each Challenge. We need to ensure we apply our resources and effort in ways that make the most impact. We need to measure the effectiveness of our actions, and then to tell the rest of the world what we have learned. Underpinned and driven by the work of our excellent researchers, both staff and students, we can be 'intelligent partners' supporting and guiding those we work with. We can, in a wholly positive way, see Northamptonshire as our laboratory where we try out protocols and procedures that evidence indicates will work. We can measure the results and tell the world about our unique findings.

The Changemaker Challenges are not short-term projects. They are now the way the University of Northampton operates. We act as an intelligent, evidence-based partner. We learn and disseminate our results. We are truly Local2Global.

The future of research in the University of Northampton is about impact. Whether it is blue-sky, fundamental research or straight-forward applied research, we will have impact. Working with partners we will make a positive difference. In 2025 the Director of Research, Impact and Enterprise will have a great story to tell.

### **Professor Simon Denny**

Director of Research, Impact and Enterprise



# The most toxic place on the planet

The recycling of ewaste (electrical and electronic waste) in developing countries is posing serious health risks – the photo shows a recycling process in Agbogbloshie, Ghana, which is thought to be the most toxic place for human health on the planet – worse than Chernobyl. Margaret Bates' research is starting to have positive effects on the way ewaste is recycled, for the benefit of the workers.

"The issue of ewaste is important all over the world as a rising demand for technology means that more equipment reaches the end of its life," said Margaret.

"In most developed countries recycling is carried out to high health, safety and environmental standards but in many developing countries it is rudimentary and unsafe. The picture shows the most toxic place for human health on the planet, Chernobyl is number 2! The people are on Agbogbloshie in Ghana, burning plastic cables to get to the copper inside. We are working in a number of African countries to try and find better ways for the workers to recover the metals without exposing themselves, or the environment, to hazardous chemicals. In one of the markets in Nigeria we were told that they don't burn the plastics now, because of our work".



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**Margaret Bates** is Professor in Sustainable Wastes Management at the University of Northampton. She has been involved in wastes management for 25 years and undertook her PhD on landfill microbiology. Margaret is a Chartered Waste Manager, an International Wastes Manager and a Chartered Environmentalist. She is currently chair of the Chartered Institution of Wastes Management (CIWM) Scientific and Technical Committee, and in 2016 will become President of CIWM. Currently, Margaret is working with a group of stakeholders to develop solutions to the ewaste problems in developing countries.



# Researching the ancient University of Northampton

Northampton was home to one of just three universities in England in the thirteenth century – Oxford and Cambridge being the other two. Dr Cathy Smith and Dr Drew D Gray have been delving through the archives to find out more about the historical precedence of university education in the town.



**Dr Drew D Gray** is course leader for BA (Hons) History and teaches on the history and criminology programmes. His research focuses on the role of the Justice of the Peace in the 18th century and the use of the criminal justice system. He also has a strong interest in Northampton's heritage and has worked with internal and external partners to create an App (Follow Northampton) that celebrates the town's history and cultural heritage. His latest book on Crime & Punishment, 1660-1914 will be published by Bloomsbury in November 2015.



**Dr Cathy Smith** is currently subject coordinator for History and teaches across the undergraduate and postgraduate curriculum. Her recent research has focussed on the history of mental health and the Victorian lunatic asylum. She has written and published on living with insanity, rationalising death in the Victorian Asylum, violence and the insane, and nineteenth century charitable support for the mentally ill. Cathy is currently completing a book on the patient experience of Northampton General Lunatic Asylum (St Andrew's Hospital) between 1845 and 1876.



2015 is an auspicious year for the University of Northampton. Not only does it mark the 10th anniversary of the granting of University Title but it also signifies the 750th anniversary of the dissolution of the ancient University. Today Northampton shares its university status with a further 114 institutions – but for a brief period in the thirteenth century, it was one of only three towns in England to have this claim.

To celebrate the past, present and the future, Drew and Cathy have been researching Northampton's educational heritage. The focus initially will be on those four years between 1261 and 1265 when Henry III granted permission for the settlement of a university in Northampton. During these years scholars from Oxford and Cambridge decamped to Northampton – a decision not simply based on Northampton's location but one that was informed by the reputation this town had already established as a centre

for learning. Northampton had an early university school as far back as the 12th century and it seems to have been popular with King Richard I (the 'Lion-heart'). Between 1176 and 1193, it has been argued that the studium at Northampton 'rivalled or even eclipsed the Oxford schools'. But when Richard went off on crusade (and was captured by Leopold V, Duke of Austria) the focus shifted to Oxford. In 1261 it shifted back but after only for four years. In 1265 Henry III wrote to the Mayor and citizens of the town and in the words of Thomas Fuller (1840) Northampton was 'un-universified'.

Our aim is to look more closely at the historical precedence of university education in Northampton. This has and will involve archival research in the British Library, the Bodleian, Cambridge Library and The National Archives.

## Celebrating the historical precedence of university education in Northampton

# Making a bee-line for urban areas

While the solitary bee's decline can be attributed to destruction of natural habitats, research by Muzafar Hussain shows that urban areas have the potential to support wild bees.

Solitary bees are important pollinators which provide pollination services for the production of fruit and vegetables, and seed set in wild plants. For example, insect pollination is necessary for 75 per cent of all plants used for human food worldwide, and for an estimated 87.5 per cent of the world's 352,000 plant species.

Unfortunately, solitary bees are declining due to human interference with natural systems. About 97 per cent of the flower-rich grasslands and other specific habitats for bees have been destroyed in Britain in the last five decades. Urbanisation is one of the potential factors

affecting solitary bees. The pictured bee in the core of a town centre demonstrates that such areas have the potential to support solitary bees, with small mosaics of wild floral patches, along with gardens, providing substantial resources for those wild bees.

Twelve bee species have already become extinct in the United Kingdom; many are scarce and require conservation measures to protect them. Being responsible humans, we need to think about the living beings that co-exist with us, and spare a share of resources for them before they become extinct.

**97%** of the flower-rich grasslands and other specific habitats have been destroyed in Britain

Twelve bee species have already become extinct in the United Kingdom



**Muzafar Hussain** is a doctoral research student in the Landscape and Biodiversity Research Group (LBRG), within the University's School of Science and Technology. He is also a lecturer at Shah Abdul Latif University, Khairpur, Pakistan and his study is funded by HEC of Pakistan. Muzafar is interested in plant-pollinator interactions as this mutualism contributes to maintaining robust ecosystems.

*Andrena nitida*, a solitary bee foraging on *Bellis perennis* (common daisy) flower present at a wild floral patch in Northampton town centre.





**Dr Naomi Holmes** is a Senior Lecturer in Biogeography and Palaeoecology in the School of Science and Technology. Her main research interests centre on reconstructing past environmental and climatic changes using lake sediments. Naomi also has an interest in experiential

learning, in particular through fieldwork. Leading on adventurous scientific youth expeditions allows these interests to be combined with STEM Ambassador work. Naomi is leading the science programme on a youth expedition to the Indian Himalayas in summer 2015.





## Researching environmental change in the Arctic

### On Finn ice

Visible reminders of climate change were clear to see in Arctic Finnmark when Dr Naomi Holmes visited the area. The researcher from the School of Science and Technology was chief scientist during the expedition, which was for a group of young people researching environmental change in the Arctic.

"Here we are, pictured heading back down a glacier in Arctic Finnmark after carrying up a load of kit to 'ice-camp'," said Naomi.

"Less than a week later, we could not access the ice cap safely via this glacier as a result of exceptionally warm and sunny weather. 'Ice-camp' was abandoned and all the kit retrieved.

During this expedition the research focus was environmental change in the Arctic. We saw first-hand how Arctic environments and

ecosystems are changing. Plants, birds, lakes, streams and the ocean were studied during the expedition. Over the years glaciers in this area have retreated rapidly and they are a visible reminder that environments are altering as climate changes.

It is hoped that by introducing young people to such environments they will develop a greater environmental awareness and will be inspired to continue their scientific studies in the future."



Before the University's intervention, this **project** was making a loss of **£70,000**

## In the business of helping business

Without sound financial decision-making processes, companies can incur considerable losses. Researcher Dr Liying Meng, from the University's Northampton Business School conducted a knowledge transfer project to help address a logistics firm's loss-making project.



**Dr Liying Meng** is a qualified civil engineer (Shanghai/China), computer scientist (Wurzburg/Germany) and specialised in business performance improvement during her PhD study at Cranfield University. Her research interests lie in entrepreneurship and small business growth. Liying is currently supervising three PhD students in these fields and has been involved in various research projects.

A former benefactor of a Knowledge Transfer project, she is a keen champion of related partnership initiatives.

Total Logistics has undergone several progressive transformations since its inception in 1989. These changes have related mainly to branding, premises and technology, but the thrust of business development has invariably been entrepreneurial by nature. This approach has ensured the survival of the company, but has precipitated a culture whereby the pursuance of new business opportunities is not always balanced with the development of business processes. For example, the image shows employees working on a large bottling and storage

contract. This project made a loss of £70,000 because labour and other variable costs had been based on client information rather than accurate project cost analysis. Moreover, the losses were not realised until they had become considerable.

Dr Liying Meng, of the Marketing and Entrepreneurship Group, obtained funding from the Technology Strategy Board for a Knowledge Transfer project to help the company with its adoption of advanced business processes including financial planning.





I wanted to help young people reflect on their drinking habits

## Unmasking the issue of drinking habits

Senior Lecturer in Drama and Acting, Dr Sally Cook, drew on her expertise to produce performance research which helps young people reflect on their drinking habits.

"This image captures the essence of the performance research I undertook that informed the creation of an original piece of theatre funded by a research and development grant from Arts Council England and the University of Northampton's Innovation Fund," said Sally.

"The aim of this new theatrical work was to promote responsible drinking to young people aged 16 to 24 in an entertaining and unusual way. I wanted the theatrical experience to be exciting and visually arresting so that the show (and thus its message) would have impact in the long-term as well as the short-term.

I drew on my past experience as a professional mask maker/deviser/ performance director but instead of using a traditional narrative form, I experimented with blending a more contemporary form (using film, projection-mapping, iPads and mobile phones) with cartoon-style masks – something that had not been done before! Inspired by the Changemaker ethos of the University, I wanted to help young people reflect on their drinking habits, and to give them the information they needed to realise that they have control over their lifestyle choices."



**Dr Sally Cook** is a Senior Lecturer in Drama and Acting. She worked as a professional performer and director for 15 years before moving into education. As well as a successful freelance career, Sally was the founder and joint artistic director of Trestle Theatre Company, which toured its unique style of masked theatre both nationally and internationally. Highlights include her work being performed at The Royal Opera House in Sydney, and collaborating with Sir Simon Rattle.



**Jane Youell** completed a degree in Psychology at the University of Northampton in 2009. Following a year of work experience, she was offered a PhD scholarship through the Institute of Health and Wellbeing, University of Northampton to continue her studies. Her research interests are predominantly in intimacy, sexuality and dementia. Her broader interests lie in autism, cognitive impairment, relationships and social justice. Jane continues to work part time within the Institute, has recently formed a consultancy business and cares for her family.



**Kim Stuart** has been a senior lecturer in Occupational Therapy within the School of Health for the past 11 years and is currently studying for her Doctorate of Professional Practice. Since qualifying in 1997, Kim has worked within a range of clinical specialities culminating in a dual role of Clinical Specialist Occupational Therapist for Cardio-respiratory and MacMillan research fellow. A consistent feature of her clinical career has been working with people who are approaching end of life and has continued to explore this in her current academic career.

## Resolving an ageing problem

The UK's ageing population throws up a multitude of challenges involving dementia and end-of-life care – two areas of research Jane Youell and Kim Stuart are working hard in to try to make life better for the older person.

The UK has an ageing population, and strategies to enable proactive health and social care have been proposed to not only support older people to remain healthy and independent, but to deliver timely end of life care.

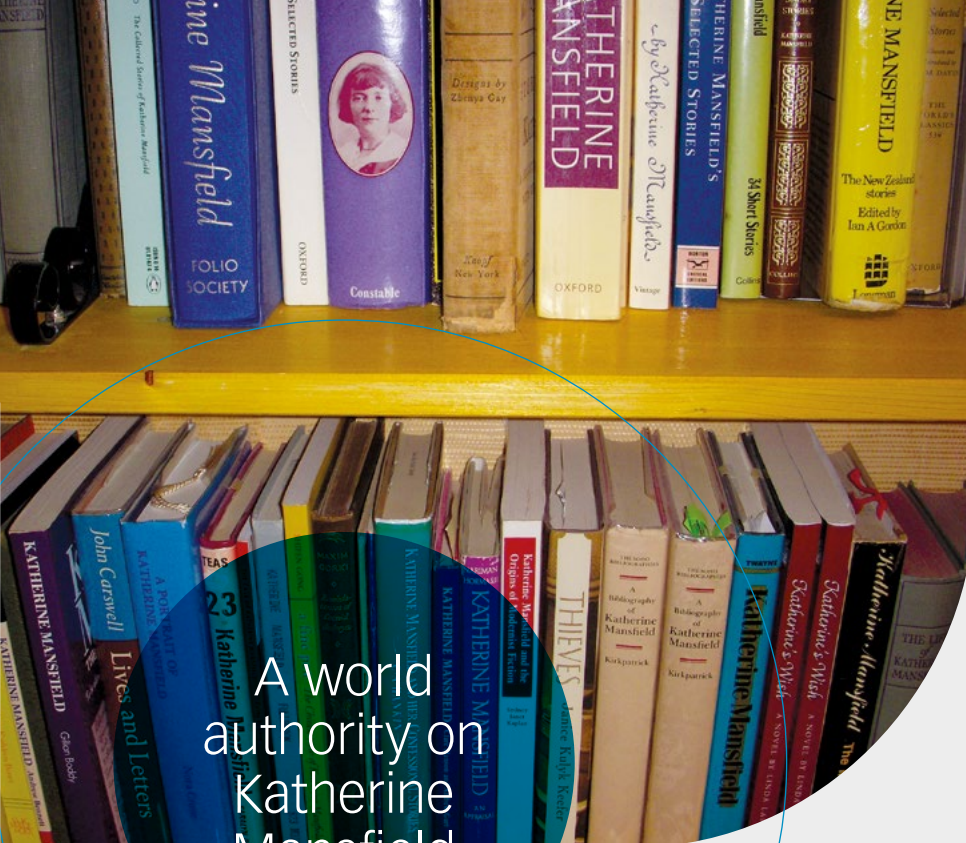
One aspect of the ageing population is the increase in incidence of dementia. According to the Alzheimer's Society there are currently 850,000 people living with a diagnosis of dementia in the UK. In response to concerns about an ageing population, the consequent increase in dementia incidence and associated costs in terms of the health and social care, successive UK governments have formulated policies and legislation. The current emphasis is on keeping elderly people, including those with dementia, in the community for as long as possible but this has relational consequences as couples come to terms with the diagnosis, the changes which occur as the disease progresses and subsequent emotional challenges.

Jane's work explores the relational lived experience of dementia. Her findings suggest intimacy remains an important part of relationships affected by dementia and greater consideration and understanding by healthcare professionals should be given to this under-researched aspect of caring.

As with dementia care, end of life care should be personalised, responsive and compassionate. The Liverpool Care Pathway review surmised a 'lack of compassion; a need for improved skills and competencies in caring for the dying; and a need to put the patient, their relatives and carers first, treating them with dignity and respect'. In response to this challenge, Kim's study aims to synergise research and practice to develop and inform service planning and policy, contributing to high-quality service delivery and care at end of life for the older person.







A world  
authority on  
Katherine  
Mansfield



**Gerri Kimber**, Senior Lecturer in English at the University of Northampton, is co-editor of the annual yearbook *Katherine Mansfield Studies*, published by EUP, and Chair of the Katherine Mansfield Society. She is the deviser and Series Editor of the four-volume Edinburgh Edition of the Collected Works of Katherine Mansfield (2012-15). She is the author of *Katherine Mansfield: The View from France* (2008) and *Katherine Mansfield and the Art of the Short Story* (2015).

## Why borrow books when you can have your own library?

Senior Lecturer in English, Gerri Kimber, is considered a world authority on modernist writer Katherine Mansfield. She has also built up an extensive personal library of all things Mansfield – which she has childcare and the high cost of rail travel to thank for.

"Whilst studying for my PhD at Queen Mary, University of London and then Exeter (my supervisor took up a Chair and I moved with her), I lived in Gloucestershire," said Gerri.

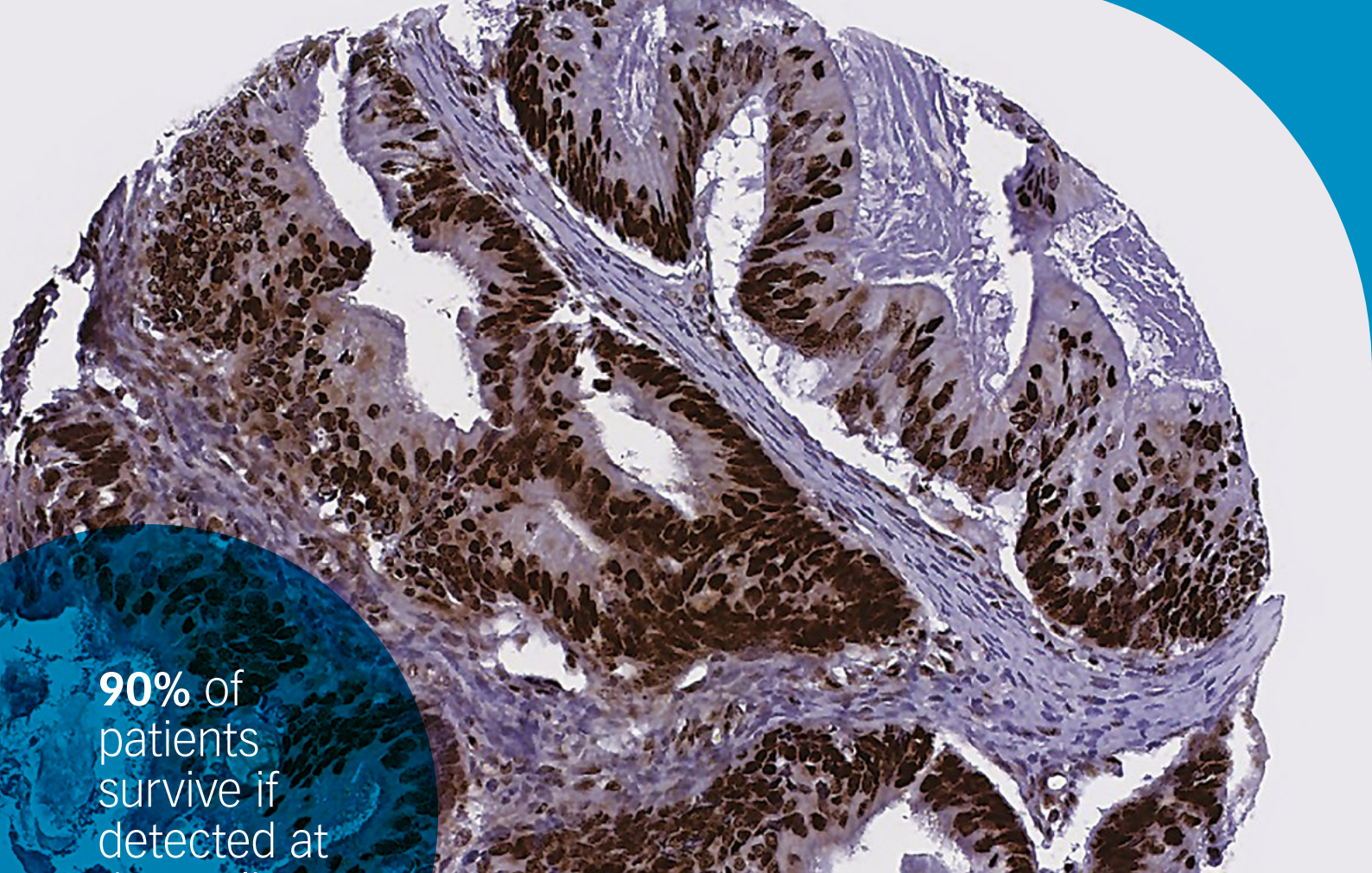
"My daughter was very young and it was hard for me to spend lengthy periods in libraries undertaking necessary research. In addition, trips to London and Exeter were expensive and time-consuming. It soon became clear to me that it would be cheaper to buy the books I needed for my research than pay for train fares – and associated costs – to get to libraries.

I discovered that second hand books are much cheaper in the USA than in the UK, even allowing for postage. Therefore, as and when necessary, I would go online and spend some time searching various second-hand book websites looking for

the cheapest copies possible of the volumes I needed. No book ever took longer than a month to arrive, and very occasionally the cheapest volume was actually in the UK (though this was a rare occurrence!) Now, I have an incredible Mansfield research library at my fingertips, and in the ensuing years have become a world authority, with my own publications to add to my collection!

My Katherine Mansfield library is now mostly complete. The only volumes missing are the most expensive and rare collectors' items costing many thousands of pounds, which will sadly always be out of my reach. But, nevertheless, out of necessity has grown a resource, which I can honestly say has been in constant use almost every single day since the early days of my PhD studies."





90% of patients survive if detected at the earliest stages

## Putting a DAMPener on ovarian cancer

Dr Lee Machado and his team at the University are studying molecular patterns in tumour tissue – research which they hope will help predictions of survival for those with ovarian cancer.



**Lee Machado** is a Senior Lecturer in Biochemistry in the School of Health and leader of the Ageing Research Centre in the Institute of Health and Wellbeing. His research is focused on employing cellular and molecular genetic strategies to address how the host immune system responds to pathogens and cancer. The aim of this work is to increase our understanding of human health and disease and develop rational therapeutic approaches to harness the exquisite specificity and sensitivity of the immune system.

Whilst survival from ovarian cancer has almost doubled over the last 30 years, the five year survival rate is still relatively poor at approximately 40-50 per cent. The incidence and mortality rate in women over the age of 65 is notably higher with patients typically presenting with Stage III/IV metastatic disease. If detected at the earliest stages of development, 90 per cent of patients will survive. Therefore, it is vital that novel independent prognostic markers are identified in order to improve our understanding of ovarian cancer biology and the management of these

patients. This image represents our work with tumour tissue expressing a Damage Associated Molecular Pattern (or DAMP) that is expressed in ovarian cancer (brown pigmented cells). Patients that express lots of this molecule tend to have a worse prognosis suggesting that DAMPs may be useful biomarkers in predicting survival and may provide a novel therapeutic target.



# An ecosystem in a cup

What would you expect to find within a flower? Possibly not an entire eco-system including small frogs at the very top of the food chain. Jeff Ollerton did...

"During November 2013 I undertook field work in south east Brazil with postgraduate students from the University of Campinas, visiting dry scrub (cerrado) and rainforest habitats," said Jeff.

"The purpose was to survey plant communities to add to our global database of pollination mode in the flowering plants; this data set is enabling us to understand how the relative importance of wind and animal pollination varies geographically and across habitat types (Ollerton et al. 2011; Rodrigo Rech et al. in prep.) In the Atlantic Rainforest I photographed the flowers of a plant from the pineapple family (the Bromeliaceae) emerging from the water-filled cup formed by its over-lapping leaves. This water contains algae, insects (note the mosquito larvae, bottom centre),

and small frogs, breeding and feeding on one another to form an entire ecosystem in a cup. The Bromeliaceae is an ecologically very important family in South America as its complex morphology, with self-contained communities of plants and animals, adds to the rich biodiversity of the continent."

## References

Ollerton, J., Tarrant, S. & Winfree, R. (2011) *How many flowering plants are pollinated by animals?* *Oikos* 120: 321–326.

Rodrigo Rech, A., Ollerton, J., Dalsgaard, B., Sandel, B. & Svenning, J-C. (in prep.) *The macroecology of animal versus wind pollination.*



**Jeff Ollerton** is Professor of Biodiversity in the Department of Environmental and Geographical Sciences. He has broad research and teaching interests in the ecology, evolution and conservation of the Earth's biodiversity, particularly plant-pollinator relationships, pollinator diversity, plant reproductive biology, and the evolution of flowers. Field work to support this research has been conducted across Europe, Africa, South America and Australia.





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