

Pint of Science



presents...

Creative **REACTIONS**



18TH - 20TH MAY 2015
CAMBRIDGE UK



The birth of Creative Reactions

This booklet was curated by: Mickey Batchelor, Armando Carlone, Carme Mont, Stanley Strawbridge, Lorenza Toffolon.
Pint of Science 2015 Cambridge, U.K.

In 2013 we started the science festival 'Pint of Science'. It was an ambitious undertaking to form a collaboration between five universities in London, Oxford and Cambridge that brought researchers out of the lab and into their local pub to explain to the public what they do.

After our first sell-out festival in May 2013, we received lots of interest from all over the UK and around the world and in 2014 the festival grew quickly to 5 countries with 20 cities participating. We dreamed of making something even grander; we wanted to make special events that would bring our love of science and art together. We pitched this idea to our teams around the country and one special team chose to make this happen.

Armando Carlone and Stanley Strawbridge who co-ordinated Pint of Science in Cambridge began to formulate a plan that at times seemed very far-fetched and too ambitious. In the spirit of Pint of Science 'it's better to try and fail rather than sit around and dream about it', the Cambridge team pushed forward. Armando and Stanley linked to Mandy Knapp and Karen Jinks from Cambridge Creative Network to form an inspirational partnership between scientists and artists.

Over the next few months we put our full trust in the Cambridge team and let them get on with Creative Reactions, not knowing what to expect (or indeed if anything was happening), while we focused our attention on the rest of Pint of Science. We will never forget the moment when we walked into the exhibition and saw all the artwork on display - we were simply overwhelmed and thought we had accidentally walked into something else. The variety of art and the professionalism with which it was presented; the event with a band, magician, dancers, Science beer; talking to the artists who were completely inspired, was far greater than we could have imagined (and we do think big!).

Creative Reactions is a true triumph of the spirit of collaboration, creation and art. Yes, there was a lot of science that inspired it, yet, the hands and minds of the organisers involved, many unmentioned, made this happen and will be remembered by so many. We truly hope this is just the beginning of something remarkable that will stay here to leave its mark.

Dr. Michael Motskin and Dr. Praveen Paul
Directors and Founders, Pint of Science

The inception of Creative Reactions

One fateful British Autumn evening at the Free Press Pub in Cambridge, we met to discuss the upcoming Pint of Science festival that we decided to endeavour upon. The past two years the Central Team in London had suggested piloting different types of sister projects in individual cities to find something that could accompany the larger festival as a whole.

The festival was eight months in the future and, with the encouragement of Michael Motskin and Praveen Paul, we wanted to build upon the previous year's success by incorporating a new event in Cambridge. It needed to be something that would tie the Cambridge branch of Pint of Science together. It needed to be engaging, memorable, and, most importantly, fun. After a few minutes we had arrived at the vague idea of art-meets-science for our pilot project.

The ambitious goal of the project was to engage the public and break the natural barriers that hamper the interpenetration of different ideas and perspectives from a range of apparently unrelated areas of knowledge and skills. The aim was to bring art and science together, to have artists interpreting science and translating it into a visual form for the public, to give a fresh perspective on it. Our intention was to have the artists engage and discuss with the speakers during the months that preceded the festival and to create artworks representing subjects gravitating around science based on the speakers' research.

The artistic message originated by the interactions between the speakers and the artists. The hope was that the artists would be able to engage with a broader audience and bring the local community together to inspire people to find out and discover more about science and the way it affects our everyday lives.

Cambridge has always been a special city for Pint of Science and it was the ideal place to test this new idea for an engaging event. We decided to name it "Creative Reactions" and that it would be the grand-closure of Pint of Science with an exhibition where art and science would mingle together.

Several weeks later, we had an enthusiastic team to organise it. The Creative reactions idea began to flourish. Months of ideas, planning, and execution culminated in the birth of Creative Reactions, which has been chronicled inside these pages.

**Dr. Armando Carlone
and Stanley Strawbridge**
Cambridge Pint of Science coordinators
pintofscience.cbg@gmail.com

Quite fittingly, our first introduction to the Pint of Science project was in the pub...

We received an invitation from Stanley Strawbridge and Dr. Armando Carlone to have a chat about a possible creative project linked to the sciences.

Intrigued, and always ready to look at new exciting opportunities for our artist's group, Cambridge Creative Network, we met over a few drinks, where they told us about Pint of Science and their idea of a pilot project that would bring speakers together with local artists.

Over the following weeks and months, our inboxes were filled with information about the different scientific talks that were going to be delivered, and many hours were spent hunched over our laptops, matching up the appropriate artists with over 50 speakers. The volunteers at Pint of Science played a huge part in keeping the links between the matches, and teams were allocated to keep the conversation and information going, enabling the artists to find out as much as they could about the talks, so they could make a piece of work in response to the specialism. Slowly but surely 'Creative Reactions' was born.

Seeing the works displayed en masse in the final exhibition at St. Barnabas, took our breath away. It was fabulous to see such a breadth and depth of work, so many mediums and genres, and so many new connections being made.

For our artists to have this kind of access to the sciences in Cambridge was ground breaking, getting behind the scenes in colleges, laboratories and research centres and pushing their work to new levels.

So will we do it again? Roll on Pint of Science and Creative Reactions 2016!

Karen Jinks and Mandy Knapp
www.cambridgecreativenetwork.co.uk

From zero to... Creative Reactions

We had an idea and we had a scope. We needed to make it happen and this was the most challenging part as it was an entirely new event which forced us to venture into unknown lands. We had experience in organising Pint of Science and we knew how to find organisers and speakers and what we needed in a pub for the talks. However, we had no idea how to tap into the vibrant artistic network and scene in Cambridge, to liaise and brief artists, or to curate an exhibition. Our challenge was set.

To start with, we needed to understand if this idea was feasible from the artists' point of view. We met with Mandy Knapp and Karen Jinks from CCN who also gave the feel of the Cambridge arts community. Both were very enthusiastic, so we knew we were on the right track and they supported us as primary liaison with the artists for 2015 edition of Creative Reactions.

All the Cambridge Pint of Science's organisers were excited about this special event and a core group of people from within the festival came together to make sure it would happen; we had a team!

Our intention was to have the artists engage and discuss with the speakers during the months that preceded the festival and to create artworks representing subjects based upon the science. We, therefore, had members from each one of the individual teams of Pint of Science to connect the artists with the speakers. They were the translators, communicating between science and art.

With another box ticked off the to-do list, we were ready to move on to plan the actual night. Finding the venue, getting the entertainment, brewing our very own beer!

Creative Reactions was the natural grand finale of Pint of Science in Cambridge, on Thursday 21st May 2015; speakers and attendees from the pubs, together with the people who couldn't find a ticket for the sold-out festival in time, would all come together to enjoy the art. We had an unexpected participation of more than 700 people! Creative Reactions saw 55 local artists including dancers, illustrators, painters, jewellers, sculptors, and

graphic designers paired up with Pint of Science speakers to produce science-inspired artwork around the six chosen themes; Atoms to Galaxies, Beautiful Mind, Our Body, Our Society, Planet Earth, and Tech Me Out. The innovative climax opened by the deputy mayor of Cambridge, Cllr. Robert Dryden, displayed the unique pieces of art in a collective exhibition for the public to view at their leisure.

As well as having the opportunity to vote for the artwork that they liked best, guests enjoyed a drinks reception with Science, the official beer of Pint of Science 2015, live music from the Flying Machines and a dance performance by Cambridge Contemporary Dance. Pieces were sold during the event and part of the proceeds contributed to a good cause for the local charity Arthur Rank Hospice Charity.

After nearly a year of hard work, it was breathtaking to see Creative Reactions and Pint of Science happening and to see all the people enjoying the events.

**Dr. Armando Carlone
and Stanley Strawbridge**

**Cambridge Pint of Science coordinators
pintofscience.cbg@gmail.com**



To go to a pub and listen to great scientists talk about the topics that passionate them and to be able to ask them questions, while having a pint... I knew the festival would be good, but it exceeded all my expectations!

Carme Mont (organiser)



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1 Sarah Connors with an attendee





- 1** Cllr. Robert Dryden, Armando Carlone and Stanley Strawbridge
- 2** Clara Novo and Sarra Achouri
- 3** Laetitia Schwab, an attendee, and Patricia Vazquez
- 4** Debs Roebuck and Michael Motskin

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Learning more about a specific area of current scientific research stimulated me to make new work to follow a new line of artistic enquiry, I am now working on a collaborative art/science project with the scientist I was linked with.

(Sarah Harley)



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During the Creative Reactions collaboration I have met some great people, have been granted insights into new worlds and places, learnt new things and, as a consequence, have evolved artistically and personally.

(Manuela Hübner)



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I came away from chatting with my scientist feeling awestruck by his work on photosynthesis and how incredible and intricate the workings of nature are, and how there is so much more that we can learn.

(Jill Fordham)



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Creative Reactions has been a wonderful opportunity to engage and collaborate with both the artistic and scientific communities in Cambridge; we hope to participate again.

(Cambridge Contemporary Dance)



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I did really enjoy the evening - the whole concept worked really well - the talks, the artists, your team's infectious enthusiasm, and a fantastically switched on audience. It was really a nice atmosphere!!

(Prof. Clive Oppenheimer)

1 Stanley Strawbridge

2 Michael Motskin

3 Lynn Morgan and Chloe Christine-Wallis from Arthur Rank Hospice Charity, with Sarra Achouri



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Thanks to Pint of Science I had the opportunity to learn something new on a topic that I didn't know before and it really gave a boost to my creativity and new ideas.

(Anonymous)





1 Cambridge Contemporary Dance



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It was a splendid project for me personally, and an amazing show in total - congratulations are due to all the team. I find that joint exhibitions give me the chance to look into new methods and art styles I would not normally approach.

(Diana Probst)





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Atoms to Galaxies

Night	Title of the talk	Speaker	Artist
Monday 18th May	Graphene Future Emerging Technology	Prof. Andrea Ferrari (Director of the Cambridge Graphene Centre at Cambridge University)	Aurora Cacciapuoti
	Making Materials Come Alive	Dr. Stoyan Smoukov (Group leader at the Department of Materials Science and Metallurgy at Cambridge University)	Maria Merridan
	Superconductivity and Superconductors for Applications	Prof. Bartek Glowacki (Group Leader of the Cryoscience Group in the Department of Materials Science)	Nick Edwards
Tuesday 19th May	Biological solar panels	Dr. Paolo Bombelli (Postdoctoral fellow in the Department of Biochemistry at Cambridge University)	Mandy Knapp
	Gone Fission	Paul Clarkson (PhD Candidate at Cambridge University)	Maria Gulemetova
	Tracking the "Magic" of Photosynthesis using Ultrafast Lasers	Nicholas Paul (PhD Candidate at Cambridge University)	Jill Fordham
	The theory of the pint	Alan Chorlton (Director at Pharmorphix SAFC and Alchemist Brewery)	N/A
Wednesday 20th May	Dark Matter	Prof. Carolin Crawford (Prof. of Astronomy at Gresham College at Cambridge University)	Martin Stephen
	The Big Bang, and the expanding Universe	Dr. Matt Bothwell (Postdoctoral Researcher at Cambridge University)	CVSPA
	Dark Energy	Will Handley (PhD Candidate at Cambridge University)	Naomi Chamberlain
	A Pint of Scheire – Science comedy at its best!	Lieven Scheire (Physics, Comedy and General Geekiness on stage and on TV)	N/A



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Beautiful Mind

Night	Title of the talk	Speaker	Artist
Monday 18th May	What Gypsies, melanoma and India can tell us about Parkinson's disease	Dr. Simon Stott (Postdoctoral Research Associate, Department of Clinical Neurosciences, University of Cambridge)	Susan Abbs
	How the brain controls the body	Prof. Daniel Wolpert (Prof. of Engineering, Department of Engineering, University of Cambridge)	CVSPA
	Idiots, imbeciles and cretins. How our diagnoses have changed.	Dr. Ian Coyle-Gilchrist (Clinical Fellow, Department of Clinical Neurosciences, University of Cambridge)	Katy Figg
Tuesday 19th May	Beautiful brains, broken brains and faith	Rev Prof. Alasdair Coles (Prof. of Neuroimmunology, Department of Clinical Neurosciences, University of Cambridge)	Alan Rogerson
	The mohawk of consciousness	Dr. Srivas Chennu (Senior Research Associate, Department of Clinical Neurosciences, University of Cambridge)	Sarah Harley
	Artificial consciousness	Prof. Murray Shanahan (Prof. of Cognitive Robotics, Department of Computing, Imperial College London)	Tiina Teaspoon
	Does brain stimulation boost the effects of brain training?	Dr. Joni Holmes (Senior Investigator Scientist, MRC Cognition and Brain Sciences Unit)	Kirsty Wagstaffe
Wednesday 20th May	The generalisation game	Dr. Tom Manly (Programme leader, MRC Cognition and Brain Sciences Unit)	Sophie Caroline Hill
	Would you use brain stimulation to enhance your intelligence?	Imre Bard (PhD candidate, London School of Economics and Political Science)	Farah Mulla



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Our Body

Night	Title of the talk	Speaker	Artist
Monday 18th May	Antibiotic resistance on the rise	Prof. Duncan Maskell (Marks and Spencer Prof. of Farm Animal Health, Food Science & Food Safety and Head of the School of Biological Sciences)	Tony White
	From Tropical to Urban Jungles: Emerging Infections in a Connected World	Dr. Lydia Drumright (University Lecturer in Clinical Informatics)	Claudia Stocker
	Is there a treatment for Parkinson's hidden in the pharmacy?	Dr. Maria Herva (NC3Rs David Sainsbury Research Fellow)	Stacey Gould
Tuesday 19th May	Stem cells and the brain	Prof. Robin Franklin (Prof. of Stem Cell Medicine and Head of Translational Science at the Wellcome Trust-MRC Cambridge Stem Cell Institute)	Dr. Jon Heras
	The naked mammal: capturing unspecified founder cells to understand development	Dr. Jennifer Nichols (Group Leader at the Cambridge Stem Cell Institute)	Aurora Lombardo
	Stem cells: key to life or overrated?	Dr. Michaela Frye (Group Leader at the Cambridge Stem Cell Institute)	Charlotte Morrison
Wednesday 20th May	Spontaneous bleeding, health and the humoral economy of bodies in pre-modern medicine	Dr. Gabriella Zuccolin (Wellcome Trust Research Fellow and College Research Associate at King's College, Cambridge)	Karen Jinks
	Using non-invasive imaging to look at type 1 diabetes	Dr. Maja Wållberg (Principal Investigator at the Department of Pathology, University of Cambridge)	Penny Hayes
	Pre-Inca herbal medicine, Amazonian shamans and drug discovery	Dr. Françoise Barbira-Freedman (Medical Anthropologist and Lecturer at the University of Cambridge)	Maria Xoubanova



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Our Society

Night	Title of the talk	Speaker	Artist
Monday 18th May	Bread, bulgur, wine and olive oil: Food in antiquity	Dr. Evi Margaritis (Marie Curie Research Fellow, McDonald Institute for Archaeological Research, UC)	Manuela Hübner
	Advertising healthy eating in 1900	Lesley Steinitz (Ph.D. candidate, Faculty of History, UC)	Abi Stevens
	Guardians of the oyster forest	Dr. Helen J. Scales (Marine biologist, Institute of Continuing Education, UC)	Tina Bone
Tuesday 19th May	Forensic archaeology and anthropology in a war zone: Justice or closure	Dr. Corinne Duhig (Panel Tutor, Institute of Continuing Education, UC)	Barbara Nasto
	How to achieve a social life after death	Dr. John Robb (Reader in European Prehistory, Division of Archaeology, UC)	Liza Read
	A pint of lava and a packet of pumice, please	Prof. Clive Oppenheimer (Prof. of Volcanology, Department of Geography, UC)	Abi Cochran
Wednesday 20th May	Life was different then – reflecting on sex and gender in prehistory	Dr. Marie Louise Stig Sørensen (Reader in Archaeology, Division of Archaeology, UC)	Diana Probst
	What is it like to be 'come out' to?	Ashley Brooks (Graduate Teaching Assistant / PhD candidate, Department of Psychology, ARU)	Cambridge Contemporary Dance
	Psychological perspectives on pornography	Dr. Daragh McDermott (Senior Lecturer in Psychology, Department of Psychology, ARU)	Michelle Thompson



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Planet Earth

Night	Title of the talk	Speaker	Artist
Monday 18th May	Satellites: the All-Seeing Eye	Peter Fretwell (Geographic Information Scientist, British Antarctic Survey)	Tonka Uzu
	Beyond Boots: Conservation monitoring without the cold and mud	Dr. Graeme Buchanan (Senior Conservation Scientist, RSPB)	Irene Wilkes
	Monitoring volcanic eruptions and their impacts on climate	Dr. Marie Edmonds (University Lecturer, University of Cambridge)	Emma Copley
Tuesday 19th May	Living on the Edge	Dr. Iris Moeller (Lecturer in Coastal Processes, Cambridge Coastal Research Unit)	Sue Rapley
	Adapting to the inevitable	Edward Barsley (PhD Researcher in the Centre for Risk in the Built Environment, University of Cambridge)	Gareth Wild
	The rivers wrath	Andy Chia-An Ku (PhD Candidate, Department of Geography, University of Cambridge)	Stuart Jones
Wednesday 20th May	Evolution: four billion years in just under 30 minutes	Dr. Ed Turner (Academic Director, Institute of Continuing Education, Cambridge)	Dittany Rose
	Using tricks of the light for successful pollination	Dr. Beverley Glover (Director of Cambridge University Botanic Garden. Prof. of Plant Systematics and Evolution)	Wendy Bohme
	How Not To Be Eaten	Dr. Hannah Rowland (University Lecturer and Fellow, University of Cambridge)	Garance Monfort



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Tech Me Out

Night	Title of the talk	Speaker	Artist
Monday 18th May	What is Shape?	Andrew Fitzgibbon	Rob Jervis
	Data Matters: A sociologically oriented study of data on Tenison Road	Dr. Alex Taylor	Portia Rosenberg
	Artificial Intelligence : A singularity unlikely proposal	Dr. Sean Holden (Senior Lecturer in Computer Science)	Sally Stenton
	Intuition and Logic in Artificial Intelligence	Emilio Monti (Software Engineer)	Richard Gemmell
Tuesday 19th May	Using computers to understand and improve human behaviours	Dr. Philippe J. Giabbanelli (Data Scientist)	Kelcy Davenport
	Of mice and men and dolphins: understanding the evolution of gene regulation in mammals.	Dr. Camille Berthelot (Computational Biologist)	Esther Groeneveld
	How next-generation DNA sequencing works, and how it is revolutionising medicine	Dr. James Hadfield	Veta Gorner
Wednesday 20th May	Technology incorporated into art	Colin Dewar	Colin Dewar
	Building a quantum computer: one atom at a time	Dr. Robin Sterling	Liam Roberts
	Engineering life with synthetic biology	Jenny Molloy (Coordinator of the Synthetic Biology Strategic Research Initiative and OpenPlant at the University of Cambridge)	Claire Bennett



I live in Cambridge (UK) where I am attending the MA in children's book illustration. I work as freelance illustrator, make handmade crafts and run art workshops for children and teenagers.

The Science

Graphene Future Emerging Technology

Prof. Andrea Ferrari
(Director of the Cambridge Graphene Centre at Cambridge University)

Can graphene be the material of the 21st century? Are the properties of graphene so unique to overshadow the unavoidable inconveniences of switching to a new technology, such as large R&D and capital investments? A roadmap of this novel but not yet mature technology can be envisaged, including short-term milestones and long-term targets, intrinsically less detailed, but potentially even more disruptive; with opportunities in many fields and benefits to society.

Creative Reaction

I live in Cambridge (UK) where I am attending the MA in children's book illustration. I work as freelance illustrator, make handmade crafts and run art workshops for children and teenagers. I've been inspired by the shape of the graphene band structure at a Dirac point and by the hexagonal pattern of carbon atoms, that create graphene.

Moreover I've been fascinated by how graphene can conduct energy (that is represented by the blond hair) and the possibility of application of this material in optoelectronics.





My work is about creating unusual relationships between personal experiences and the following themes: science, natural history, navigation, weather and journeys. I take ideas from these themes and juxtapose them with my memories. Connecting unrelated lines of enquiry introduces an element of chance to my work and other possibilities arise. I prefer to work to new directions by overworking existing surfaces rather than starting afresh.

The Science

Making Materials Come Alive

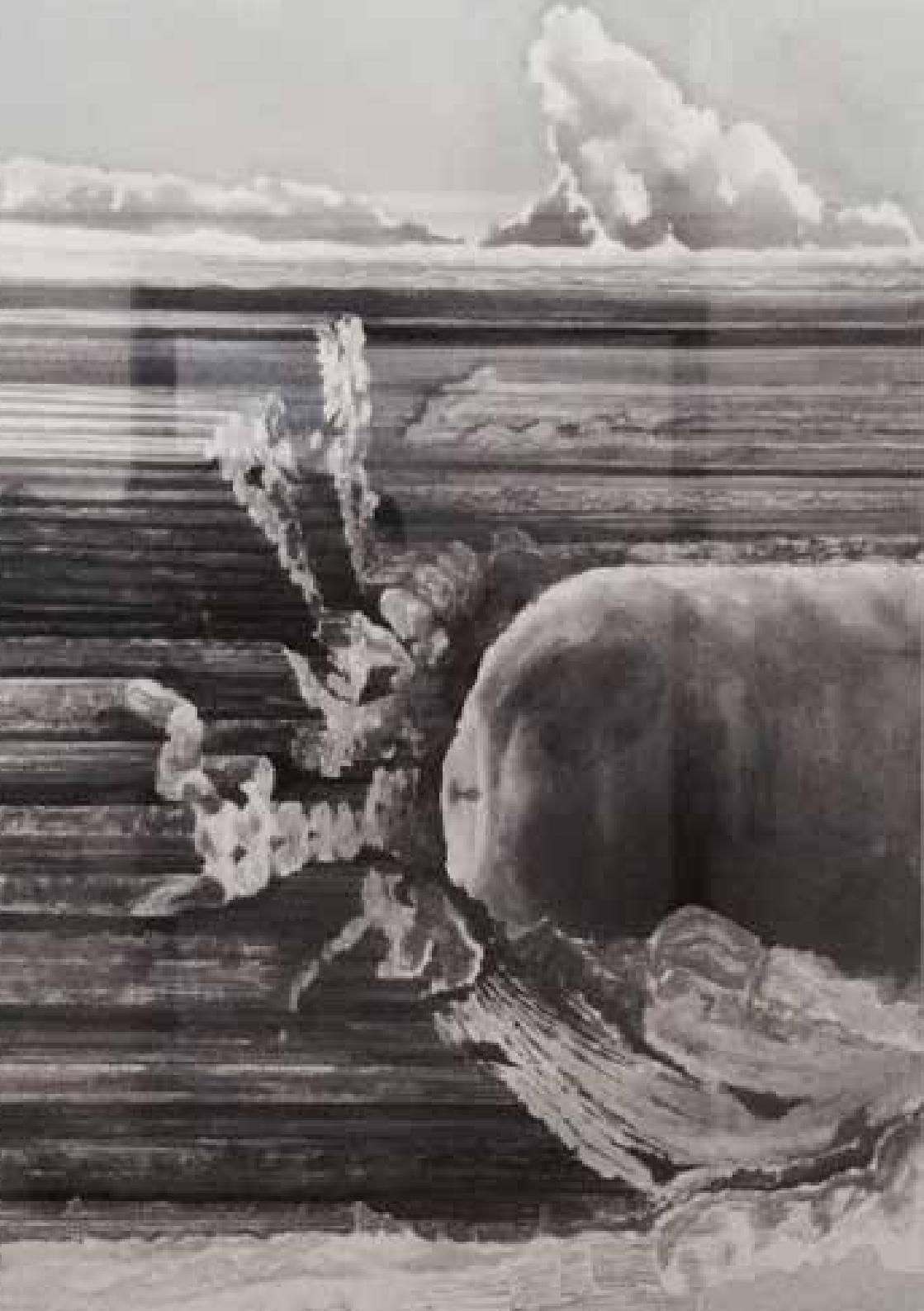
Dr. Stoyan Smoukov
(Group leader at the Department
of Materials Science and Metallurgy
at Cambridge University)

A kaleidoscope tour into recent artificial materials research will show how we distill different strategies from life and Nature to make artificial materials move, shape-shift, and even remember movements. Venus flytrap geometry inspires us to make fast-moving devices, sore muscles make us think how to make artificial muscles with muscle memory, and though turning an American football into a European football isn't easy, it is possible in materials science, with an extra kick out of it too!

Creative Reaction

Through research I came to appreciate that, 'artificial muscles are materials or devices which contract, expand or rotate to an external stimuli'. Practically, I explored this notion by using tightened wire coils to represent materials constricting and flatter stretches of wire to show the expansion of materials moving in response to an external stimuli (in this case heat). The coils are partnered with birds in flight; the stages of wing position intended to echo the different states of coiled material movement. Contracted and expanded muscle cells feature alongside the coils. Juxtaposition of natural and mechanical forms suggest how artificial materials form intuitive relationships. Finally, a thermometer is visible reminding the viewer that an external stimuli is essential to bring the materials to life and install memory of such movement.





In the late 20th and early 21st centuries Life began to reach beyond the surface of the earth, where it had been marooned for millennia. In 1961 Yuri Gagarin launched into space and our universe expanded to the limitless vision of Star Trek. Our distended cybernetic senses began to show us a universe of magnificent proportions, and it seemed as if we might soon have a vision of everything, an explanation for all existence.

The Science

Superconductivity and Superconductors for Applications

Prof. Bartek Glowacki
(Group Leader of the Cryoscience Group in the Department of Materials Science)

Superconductivity is a phenomenon of zero electrical resistance and expulsion of magnetic fields occurring in certain materials when cooled below a characteristic critical temperature. A complexity of electromagnetic properties as well as variety of chemical composition of superconducting compounds has been discovered and they are so profound that require collaboration of physicists, chemists and materials scientists to produce practical superconductors for incredible applications.

Creative Reaction

Drawn from a 3-d red-blue anaglyph fractograph of a large central void in a partially heat treated OI-ST MJR Nb₃Sn sub-element. Niobium-tin (Nb₃Sn) or triniobium-tin is a metallic chemical compound of niobium (Nb) and tin (Sn), used industrially as a type II superconductor



Mandy employs printmaking techniques in her practice, enjoying using different textures and forms to depict her favourite subject, interior design and furniture. Her colourful works celebrate the forms of designs she most admires, often drawing inspiration from mid century iconic furniture.

The Science

Biological solar panels

Dr. Paolo Bombelli
(Postdoctoral fellow in the Department of
Biochemistry at Cambridge University)

Biological solar panels utilise photosynthetic (oxygenic) organisms, such as plants, mosses, algae and cyanobacterial to harvest light energy to generate current. In this talk, I aim to discuss the state-of-the-art for the existing biological solar panels and integrate them into the broad fields of renewable solar technologies. Finally, we will build and test some biological solar panels.

Creative Reaction

After attending one of Paolo's talks at the Cambridge Botanical Gardens and a very happy morning spent in his lab, the works I have made are in response to this fascinating area of plant science. I was interested in the fact that electricity could be harnessed using plants, and wanted to depict this as a design that could potentially sit well in a domestic setting. Wouldn't it be wonderful if we really had clocks in our homes, powered by plants! I am interested in interiors in my practice, and wanted to make a desirable design led piece.

In Paolo's lab, he uses algae too, and he had various Petri dishes growing beautiful organic patterns. So the Petri dishes artwork is a reminder of how lucky I was to visit his laboratory, and spend a few hours there conducting experiments, with my two children. We all felt very lucky to have this insight in to Paolo's research. The works are made in my print workshop. They are monoprints pulled on my Rochat etching press.





I am a locally based stained glass artist. My work includes taking commissions from private clients exhibiting and teaching. A source of inspiration for many of my own glass designs is capturing fluid forms, and using glass to recreate the way these forms are effected by light. I am also inspired by geometric patterns and illumination.

The Science

Tracking the “Magic” of Photosynthesis using Ultrafast Lasers

**Nicholas Paul
(PhD Candidate at
Cambridge University)**

Photosynthesis is the light-driven chemical reaction that eventually allowed aerobic life, such as humans and animals to evolve in an oxygen rich atmosphere. It also natures example of how to close the cycle of fossil fuels and make them renewable. It has been an area of great interest for applied research, such as solar fuels and photovoltaics. By understanding how Nature achieved sustainable fuels, we hope to use these lessons to assist our own synthetic solar fuel device development.

Creative Reaction

My immediate response to the information given to me by Nick was an image of the beauty of light as it shines through leaves, the wonder of this process and the hope that it offers for the earth, and so wanted to represent the earth as a stunning light /energy giving jewel. What better medium to represent this...

I chose this idea of an illuminated glass mosaic globe to represent both the nanoscopic process of sunlight impacting on leaves and cells , as well as the cosmic process of sunlight on the earth so the continents of the earth are leaf like, and the oceans are red and blue . I have tried to show the possibilities of understanding this process by the way light is given off the globe and reflects onto other surfaces.





I work as an outsider with close links between expressionist art (painting, drawing, digital art) and improvised music (instruments, samples, voice effects) I also use symbols and words (fictional stories, lyrical and narrative) with a desire to explore inner emotion and sensation. Whether chordal, theme or rhythm, texture, shape and colour, it's about entering a world of ideas created through manipulation of sound and texture.

The Science

Dark Matter

Prof. Carolin Crawford
(Prof. of Astronomy at Gresham College
at Cambridge University)

Unlike the stars and galaxies, dark matter does not emit any radiation – we can only detect it through its gravitational pull. It accounts for a quarter of the universe, we do not yet truly understand what it is. The search for dark matter is carried out both out in space and deep underground, and marks the regime where astrophysics meets particle physics.

Creative Reaction

Large Hadron Collider: I showed this painting to my Mum who looked at it for a while then gave me a quizzical look saying, What is it ?? It's the Large Hadron Collider Mum ! I proudly announced. Mum looked at me with an air of disappointment saying ... But Martin! the Large Hadron Collider is huge !! and 30 miles wide and YOU have painted a small picture.

Quite how Mum become so knowledgeable on physics all of a sudden and how she thought I could recreate the LHC in my living room is something I still puzzle over. That's Abstract Expressionism for you! True story! Dark Energy, Dark Matter: No idea what Dark Matter or Dark Energy is ...perhaps Mum knows ? In the meantime here is a picture of it.



My art is about capturing light and colours. According to art critic Carol Cordrey, "Her paintings leap off the walls because of their realism which is not achieved through tiny brushstrokes but through the bold, skillful handling of chiaroscuro and varied paint effects applied with palette knives."

My interest in genetics stems from my husband's work - he's a geneticist and often talks about exciting developments in genetics.

The Science

What Gypsies, melanoma and India can tell us about Parkinson's disease

Dr. Simon Stott
(Postdoctoral Research Associate,
Department of Clinical Neurosciences,
University of Cambridge)

Parkinson's disease is a debilitating neurodegenerative condition that is associated with progressive movement problems. This talk will discuss three little known aspects about this disease and look at how these bits of information may help us to better understand it.

Creative Reaction

My creative reactions to Parkinson's Disease are based on the highly magnified image of the human midbrain affected by Parkinson's. Silhouettes of well-known Parkinson's sufferers - Mohammed Ali, Michael J Fox, Robin Williams and Linda Ronstadt - are superimposed onto the magnified brain image. They are mere silhouettes, representing the Everyman.

Just as Parkinson's Disease takes over the life of an individual, these silhouettes have been overpowered by the magnified images of dopamine neurones to an extent where the identity of the individual is almost eliminated. It is hard to see the individuals when they are affected by Parkinson's because all you tend to see are the signs of the disease and not the person.





Sensibly Insane started as a second year University project whilst I was studying Graphic Design at the University of Teesside. However, as an artist my work goes back to early college years where I used to freelance in London photographing live music events at various clubs and the occasional hairdresser opening for L' Oreal magazine.

I use various disciplines I have learnt whilst studying and working in the field, mainly: photography, typography and design. I mix this in with classic techniques such as handcrafted type setting and 35mm photography to create traditional effects, with postproduction on computers give it a modern day edge.

My work has been exhibited at various events in the UK: 'We Came We Saw We Raved' in Leicester, 'The Collective Art Show' in Essex and 'Romsey Art Festival' in Cambridge. I have also been fortunate enough to work alongside some great names including: The Dressing Gown Mob, Mouth, Shindig and Nikki Marrone.

The Science

Idiots, imbeciles and cretins.

How our diagnoses have changed

Dr. Ian Coyle-Gilchrist

(Clinical Fellow, Department of Clinical Neurosciences, University of Cambridge)

Our understanding of disorders of the mind is constantly evolving, as is the language we use to describe them. Starting with the lunatics and syphilitics in the 19th century Parisian asylums, we track a group of diseases all the way to Frontotemporal dementia in the modern neurogenetic laboratories. How we think about and describe mental illness has as much to do with ourselves and the times we live in, as it does our understanding of the mind and the brain.



"Idiots, Imbeciles and Cretins" - Photography - 20 x 25 cm - Edition of 3



I'm a freelance artist, illustrator and cartoonist. At the moment I live in Cambridge a small medieval city on the edge of the world. Originally from London I came here to study illustration at Anglia Ruskin University and found the medieval life suited me so I decided to stay. If I ever end up living in the middle ages I would like to be the monk that draws funny characters around illuminated manuscripts. But I don't so I just draw the funny little characters. It keeps me busy and gives me a quiet life.

The Science

Beautiful brains, broken brains and faith

Rev Prof. Alasdair Coles

(Prof. of Neuroimmunology, Department of Clinical Neurosciences, University of Cambridge)

To what extent does religious belief and practice depend on the brain? What happens to religious faith when our brains are damaged? The scientific literature suggests that brain diseases diminish religious belief. However for centuries individuals, including the Russian novelist Dostoyevsky, have reported the faith-enriching experience of a particular type of epileptic seizure. And many people attest to the strengthening of their faith when coming to terms with a neurological illness.





Sarah Harley uses print, textiles and installation to explore aspects of human relationships and she is currently developing an ongoing project about neuroscience exploring the breath taking complexity and mystery of the human brain.

The Science

The mohawk of consciousness

Dr. Srivas Chennu
(Senior Research Associate, Department of Clinical Neurosciences, University of Cambridge)

Awareness is inferred primarily through our behaviour. But what if you were aware but unable to express it? Modern neuroscience is uncovering rare but remarkable examples of such awareness in the vegetative state, with profound implications for a caring society. I will highlight what current research can tell us about the neural correlates of consciousness, and how this is helping us to identify crucial brain networks that could support hidden awareness in some seemingly vegetative patients.

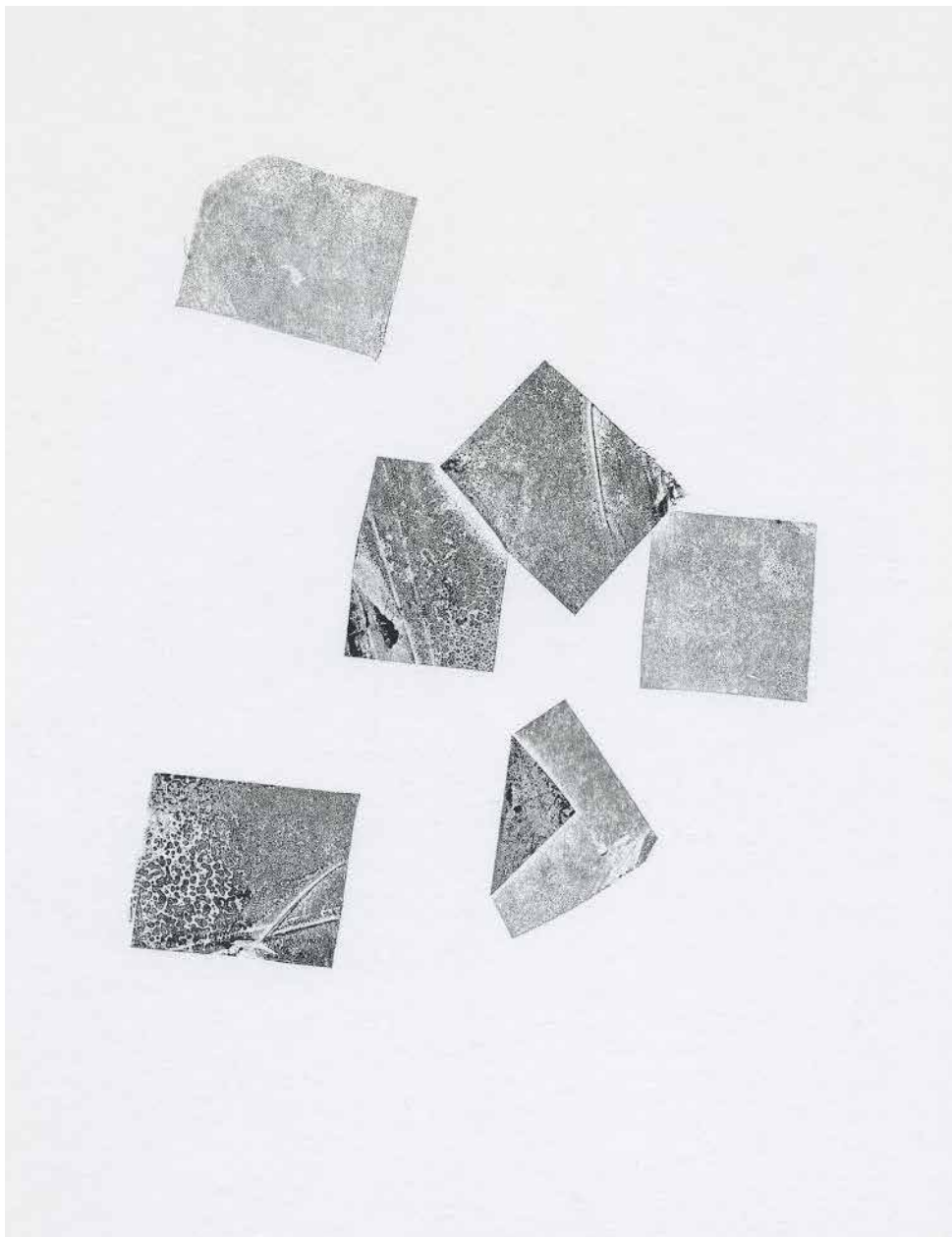
Creative Reaction

Sarah Harley uses print, textiles and installation to explore aspects of human relationships and is currently developing an ongoing project about neuroscience exploring the complexity and mystery of the human brain.

In response to Dr. Chennu's work with coma patients Sarah was moved by the search and investigation into the brains of people who are otherwise unreachable which shows the value and care we place on human life and relationships.

Her embossed print, 'your unknowable thoughts' is taken from a collage of found textiles referring to the fibrous networks of the brain. It requires close inspection to be seen and explores the loss in relationship between a coma patient and their loved ones as well as the place of 'unknowing' where scientific and artistic endeavour begins. The gold frame denotes the value and care of human life within Our Society and the love we feel for one another in personal and family relationships. Sarah Harley's mixed media piece entitled 'the search for your spark' presents a peaceful sleeping head in water unreachably encased in a thick glass jar. The threads attached to the head look like EEG wires but float and move gently up and around the head among fragments of gold leaf referring to the sparks of brain activity and thoughts of a person in coma. Although the head exists in a separate underwater space by shaking the jar we can interact causing movement and response within that world.





I want to explore a sense of not knowing – to create with a still, quiet mind; letting subconscious and intuition take the fore with an openness to the materials of ink and paper.

For my work as a fashion lecturer and for my personal practice I think about what creativity is and how it can be encouraged. Often the best work includes in-depth research followed by a period of time for the brain to work through ideas subconsciously. I look at different methods to harness the creative process.

The Science

Artificial consciousness

Prof. Murray Shanahan
(Prof. of Cognitive Robotics, Department of Computing, Imperial College London)

Can we make a conscious machine? Human-level artificial intelligence, the sort of thing we see in science fiction movies, is almost certainly decades away. But just suppose we succeeded in building such an AI. Would it also be conscious? Would it experience the world as we do? Or is intelligence a property that can be separated from consciousness? I will try to address these questions and talk about my advisory role in the film *Ex Machina*, which raises these questions in a fictional setting.

Creative Reaction

Would an artificial consciousness ever be able to take the fragments of mind - thoughts, sensations, feelings - and create a self to make them whole? What would emerge from these splinters and noise of life; would it be too clean, too perfect of a filter and lose the chaos and contradictions of the human mind? These works explore the act of bringing together conscious attention using fragments and interference.





My work is concerned with using psychoanalytic tools to access the unconscious aspect of the mind in order to develop creativity. I aim to explore the idea of the collective unconscious through visual communication. Is the viewer moved by a piece of art work because it links directly with their own experiences and their own subconscious imagery.

The Science

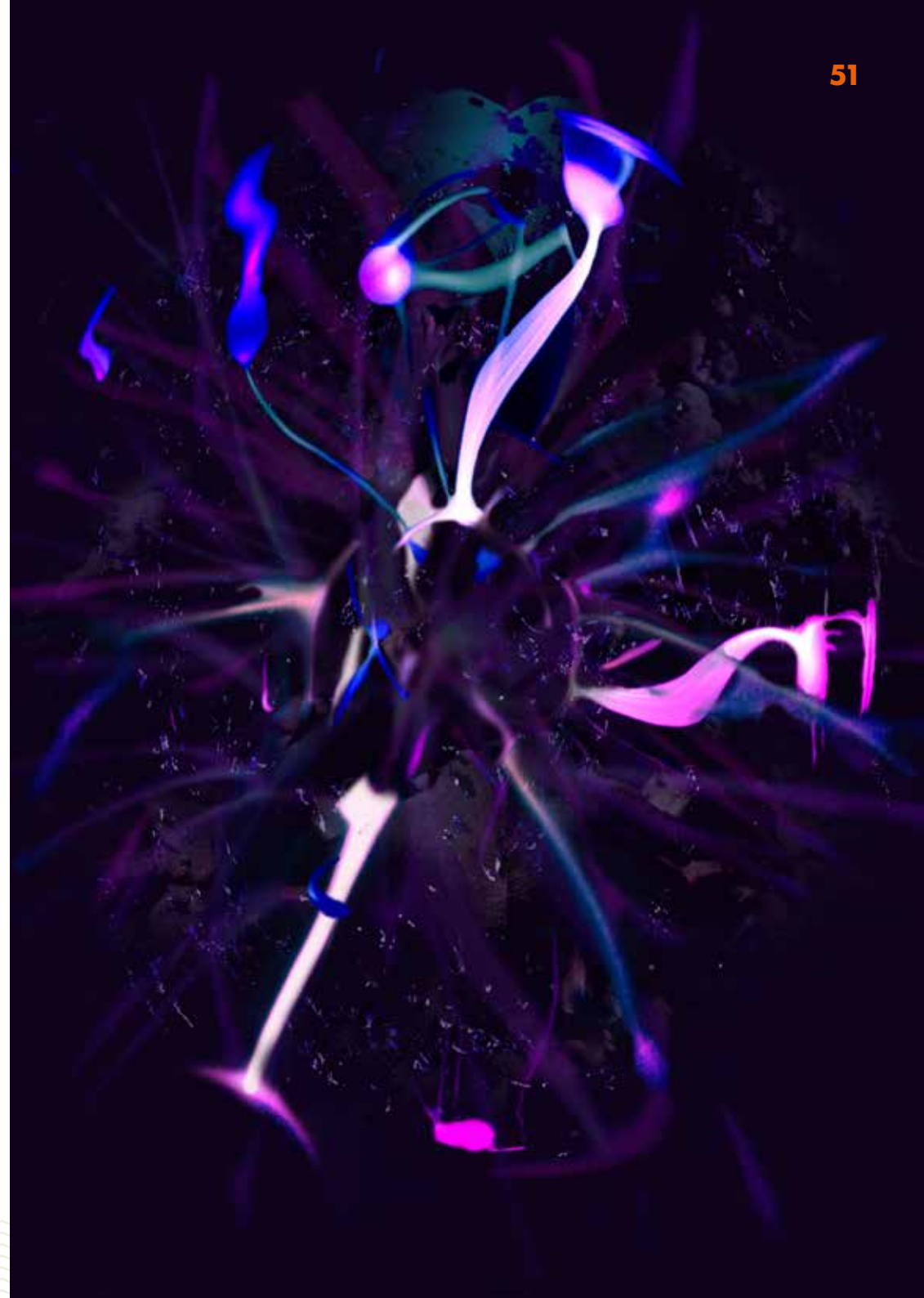
Does brain stimulation boost the effects of brain training?

Dr. Joni Holmes
(Senior Investigator Scientist, MRC Cognition and Brain Sciences Unit)

Memory training boosts performance on untrained memory tasks that are similar to the training activities, but there is little evidence that it improves everyday functioning. In this talk I will discuss whether non-invasive brain stimulation can enhance these effects to improve performance both on memory tasks that are very different to the training exercises and on measures of maths and IQ.

Creative Reaction

This work responds to the theme of non-invasive brain stimulation and memory. I have considered the internal workings of the brain and the way electrical impulses travel through the brain. The colours are representative of emotion stimulation, again aiding in memory. Hidden deep within the image are fragments representing the brain and areas found to contain memory: Prefrontal cortex, Pituitary gland and hippocampus.





The Science

Antibiotic resistance on the rise

Prof. Duncan Maskell
(Marks and Spencer Prof. of Farm Animal Health, Food Science & Food Safety and Head of the School of Biological Sciences)

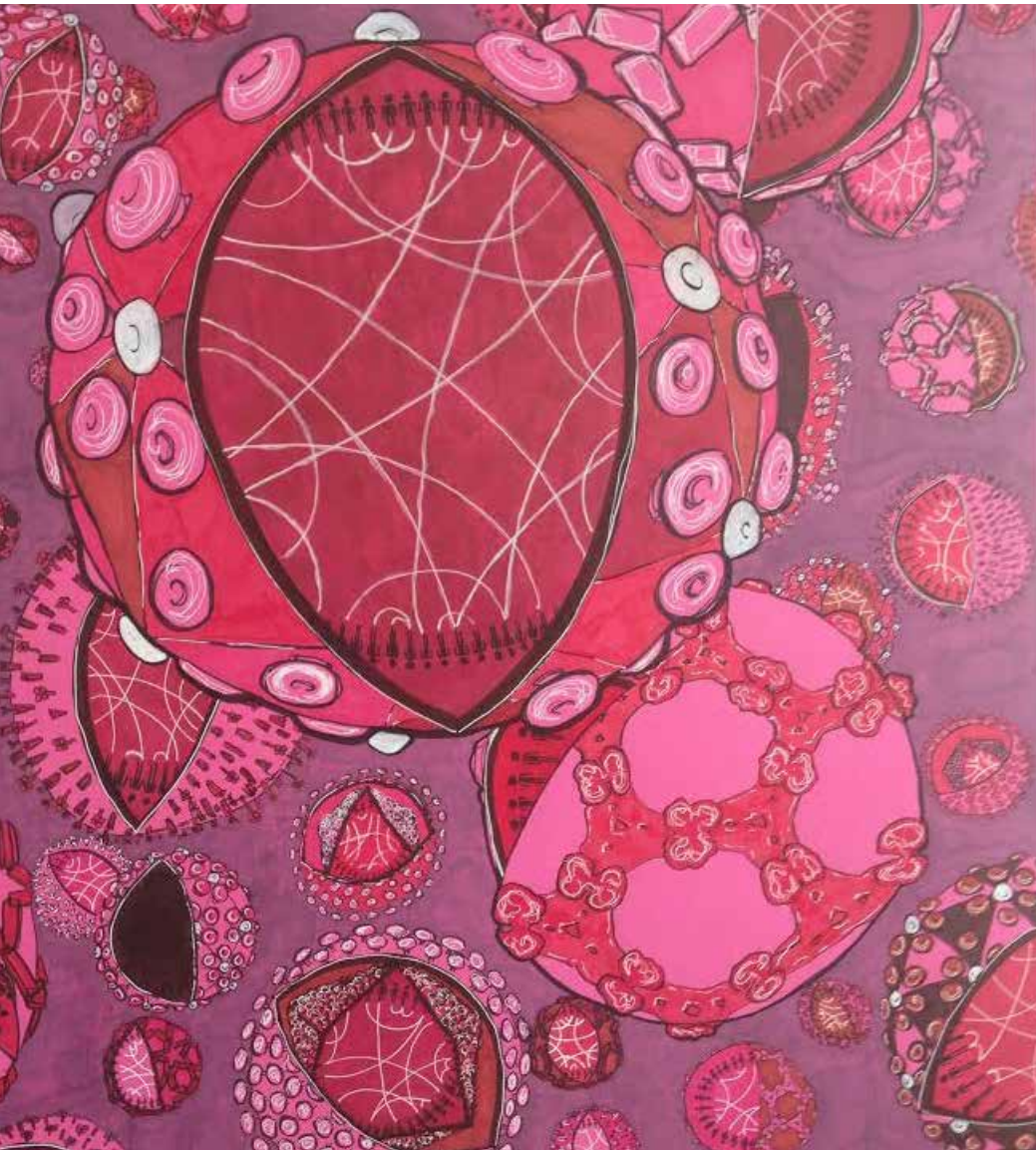
Antibiotics and antibiotic resistance have been around for billions of years. In this talk, we will cover resistance mechanisms and the mobile genetic elements that often carry the genes encoding them. We will discuss where selection pressure in human or animal medicine might make the problem of resistance worse, and where an understanding of the biology of these systems might enable us to make the situation better.

Creative Reaction

"Slide-I : Bugs and Drugs" has been produced as my creative reaction to the Pint of Science talk by Prof. Duncan Maskell and Dr Alison Mather, "Antibiotic Resistance of the Rise", which will be at the Panton Arms on Monday 18th May. It is also the start of what I hope will be a series of "Slides". I have been intending for some time to produce a large version of a Victorian microscope slide, having a background in microbiology and being fascinated by the classic design of the labels used in the late 1800's, and to add various diverse images as the 'specimens' on the slide. When I heard that I was teamed up for Pint of Science with Duncan Maskell and of his research in antibiotic discovery, a field in which I was once active, it spurred me on to produce a slide and add an image related to antibiotic resistance and the need for new antibiotics.

The slide is a linocut with decoration and colours based on a victorian label design, with the 'specimen' area showing a stylised petri dish culture plate streaked with a bacterial culture and a zone of inhibition of the bacteria surrounding an antibiotic-containing disc in the centre (a routine laboratory way of testing bacteria for susceptibility to a particular antibiotic). Within the zone of inhibition is one surviving 'resistant' bacterial colony, illustrating the selection of a resistance mutant with the potential to lead to a drug-resistant strain.





I studied Natural Sciences at the University of Cambridge, specialising in Systems Biology. In 2014 was awarded a scholarship place on the Drawing Intensive, a 6 month program at the Royal Drawing School in London. I visualise scientific subjects in a technically accurate yet appealing way. All my artwork is drawn in ink or drypoint etching. Clients I work with include Mendeley, the Gurdon Institute in Cambridge, and Equinox Graphics.

The Science

From Tropical to Urban Jungles: Emerging Infections in a Connected World

Dr. Lydia Drumright
(University Lecturer in Clinical Informatics)

The past four decades have seen the emergence of infectious diseases such as HIV, SARS and Ebola. While the emergence of new infections is likely to be a natural phenomenon, increased travel, migration, civil unrest, encroachment on animal habitats, living longer etc. are likely to facilitate both the emergence and transmission of these new infections. Hear about how these factors synergistically interact with pathogen biology and transmission dynamics to create modern pandemics.

Creative Reaction

This piece features five of the emerging viruses that Lydia studies: HIV, Norovirus, Influenza, Hepatitis C and Hepatitis E. Inside the viral structures are networks representing person-to-person transmission. The differentiated colouring on the viral capsids represents alternative strains of the viruses, some of which may be more pathogenic than others.





"Old drugs, new uses" - Mixed media on foamboard - 84.1 x 118.4 x 2.5 cm

As a Neuroscientist Stacey spends most of her time running experiments, but she also enjoys producing artwork with scientific themes. Her aim is not to explain science through art, but rather to evoke a curiosity in it. Some of Stacey's previous installations have focussed on scent-evoked memory, sleep-wake and conscious-unconscious interactions and in 2014 she exhibited an installation at Manchester Museum relating to the prevention of stroke, a medical emergency that affects millions of people worldwide.

The Science

Is there a treatment for Parkinson's hidden in the pharmacy?

Dr. Maria Herva
(NC3Rs David Sainsbury Research Fellow)

Current treatments for Parkinson's temporarily alleviate symptoms, but to date, there are no therapies capable of curing the disease. Drug development is both expensive and time consuming, taking around 15 years to bring a compound from the bench to patients. The process also requires animal research to meet UK regulations. In this talk I will describe efforts to address these issues by looking to drugs already available in pharmacies and screening whether they are suitable for Parkinson's.

Creative Reaction

Inspired by Dr. Maria Herva's talk entitled Is there a treatment for Parkinson's hidden in the pharmacy? for Pint of Science 2015, I worked with the idea that a drug designed for one use may have other unknown uses in other diseases. The labels below the prescription bags on this

piece provide a few examples of an initial use of a drug and later uses it was found to have. This work captures the familiar pharmacy environment by the way the boxes are neatly set on shelves and pre-packed prescriptions seem ready for collection. This representation of the pharmacy is coupled to a representation of a scientific method used to find a potential hidden treatment for Parkinson's disease; PCR tubes (often used for molecular biology experiments in scientific research) which contain water and a bead representing abnormal 'clumps' of a protein that is involved in Parkinson's disease (called alpha-synuclein). These protein 'clumps' can be made in test tubes in the lab and if a drug prevents them from forming, this may highlight a potential drug that may prove valuable for the treatment of Parkinson's disease (reflected in this work as the absence of a bead in the PCR tube).

The obscured names on the medicine packets and unseen boxes within the prescription bags offer no explanation as to which drug might be used to treat Parkinson's disease, reflecting the current situation.



Jon studied natural sciences and chemical engineering at Cambridge, staying on for a PhD in MRI and image processing. He founded Equinox Graphics nine years ago, born out of a hobby dabbling in computer graphics, and he produces accurate and engaging visuals for academia, industry and education. There aren't many jobs where you can be reading papers on synthetic biology, quantum mechanics and materials science, all in the same week!

The Science

Stem cells and the brain

Prof. Robin Franklin
(Prof. of Stem Cell Medicine and Head of Translational Science at the Wellcome Trust-MRC Cambridge Stem Cell Institute)

All tissues have populations of stem cells. However, not all tissues use these cells to regenerate with the same efficiency. Adult brains have plenty of stem cells. However, while they are very good at replacing glial cells (non-nerve brain cells), and especially the cells lost in diseases such as multiple sclerosis, they are very poor at replacing nerve cells lost in classic neurodegenerative diseases such as Alzheimer's disease. This talk will discuss this paradox at the heart of the brain.

Creative Reaction

The image uses public domain data from Eyewire, which is a citizen science project where volunteers create detailed maps of individual neurons in the brain, through the process of playing a competitive online game. Having detailed structures like these enables scientists to understand how the brain is wired together. The image has been created using Lightwave, After Effects and Photoshop.





My aim is to create contemporary jewellery pieces that make a statement and draw attention while remaining practical and comfortable to wear. I work mainly with silver, glass & ceramic combining the techniques of glass fusing, lampworking and ceramic bead making with metal fabrication.

The Science

The naked mammal: capturing unspecified founder cells to understand development

Dr. Jennifer Nichols
(Group Leader at the Cambridge Stem Cell Institute)

We study how the founder cells of the foetus are specified in the early mouse embryo and how we can arrest their development and propagate them in culture. Characterising this process has enabled us to search for the equivalent state in human embryos. We will discuss the commonalities and divergence between mice and men at the level of the embryo and the implications and uses of developmentally unrestricted human embryonic stem cells.

Creative Reaction

For this exhibition I've made a small collection of one-off jewellery pieces, called "Treasures within" and a framed fused glass work titled "Origins & Destinies"

As most of Dr. Nichols' work revolves around preimplantation embryos, the main inspiration for my work came from confocal images of early blastocyst stage embryos.

In designing my jewellery collection, I decided to keep the silver work simple using three metals (sterling silver, fine silver and gold) to represent the cellular diversity within the early embryo. My glass work "Origins & Destinies" was inspired by the delicate balance between pluripotency and differentiation during early mammalian embryogenesis. Different types of dichroic and coloured glass circles have been used here to represent individual blastomeres expressing distinct patterns of gene expression and providing and receiving regulatory clues that orchestrates those early cell fate decisions that are so fundamental for human life and of high clinical interest for the derivation and use of stem cells.



Most of my work has a starting point in our relationship with the body. It is inspired by personal experiences, medical science and psychology. I am interested in the complex dynamics between body and mind, perception and knowledge. Hence, my work often moves between abstracted medical and scientific imagery and descriptions to personal reflections of actual lived experiences.

The Science

Stem cells: key to life or overrated?

Dr. Michaela Frye
(Group Leader at the
Cambridge Stem Cell Institute)

Tissue stem cells are established during development and retained throughout adult life allowing the body to replace, restore and regenerate dead, damaged or diseased cells. However, stem cells often do not keep their promises: they lack clear identities, do not contribute to the regenerating organ or worse, some tissues can be maintained without them. I will discuss the very basic questions: What are stem cells? Where are they? And what are they actually good for?

Creative Reaction

My work is inspired by skin stem cells and their role in healing and repair. Small collections explore the capacity for cells to differentiate – to reconstruct sites of damage. Who and what we are seems to be dictated by how well our cells perform – and like our stem cells we have the scope for being many things.





I am a graphic designer and mixed media artist inspired by poetry and history. A passion for books and vintage ephemera, I employ various collage and paint techniques to create landscapes and imagery that hint at times gone by and evoke memories and feelings of nostalgia.

The Science

Spontaneous bleeding, health and the humoral economy of bodies in pre-modern medicine

Dr. Gabriella Zuccolin
(Wellcome Trust Research Fellow and College Research Associate at King's College, Cambridge)

The economy of bodily fluids and humours, blood theories and bleeding issues are concepts that are crucial in understanding daily practices of maintaining health and preventing illness in medieval and early modern medicine. Doctors and surgeons interpreted spontaneous bleeding as being a good sign and urged patients not to attempt to staunch those unprovoked haemorrhages considered 'favourable'. This talk will discuss these concepts and how they influenced the medical mindset of the period.

Creative Reaction

My piece reflects the difficulties of being female throughout the middle ages. Considered unholy by default, bleeding (spontaneous or otherwise) was considered to be a way for the body to rid itself of disease, physical or spiritual, which for women was particularly significant because of their monthly cycles. Surgeons at the time tried to work out the mechanics of menstruation and fertility based on the logic of the social and religious thinking of the time, which allowed for dangerous medical practises to occur.

Bloodletting was used in childbirth as a way to redirect blood back to where it belonged if the woman had a nosebleed for example. Women who worked the fields who were menstruating were feared as the blood was believed to be toxic enough to kill crops. Nuns were holy because their periods stopped, yet we now know that a restricted diet has the same effect. This has been a fascinating project despite its somewhat intimate subject matter!





My work is based very firmly in ceramics, as clay gives me a totally flexible material to work with. The direct involvement with the material without the use of many tools or equipment in the making process provides me with a very personal interaction with the clay.

I believe that art has many avenues of creativity and enriches the lives of those who participate in its creation and those who see it. Its universal language breaks down barriers and opens up new and unexpected responses.

The Science

Using non-invasive imaging to look at type 1 diabetes

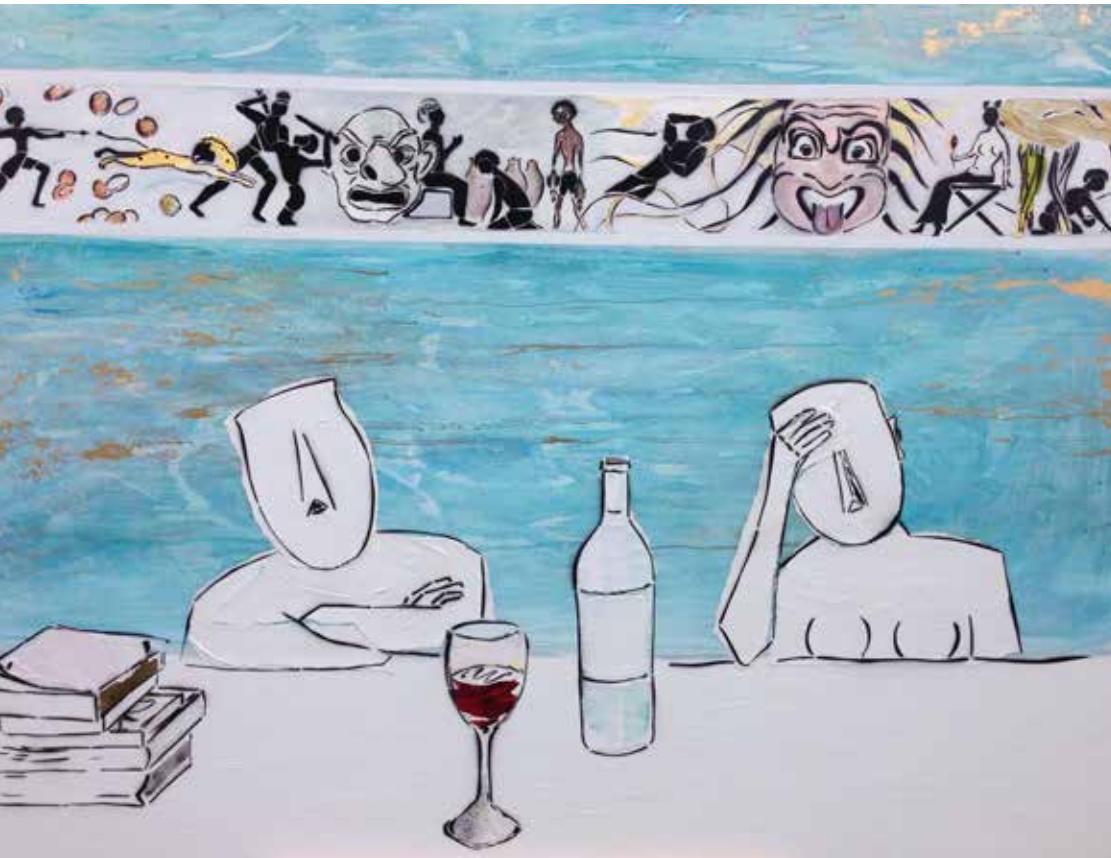
Dr. Maja Wällberg
(Principal Investigator at the Department of Pathology, University of Cambridge)

I am interested in autoimmunity, and particularly in type 1 diabetes which is caused by immune cell mediated destruction of the insulin producing beta cells of the pancreas. The aim of my research is to discover more about what causes this destruction, and opportunities for prevention and treatment of the disease.

Creative Reaction

I visited Maja at the Department of Pathology when she informed me of her work on the autoimmune system and the method of non-invasive process being used. Maja showed me a video clip of the cells in action which was magnified and stained to make identifying what was happening easier to see. I was intrigued by the shapes and forms and with further research on the internet discovered the amazing shapes, forms and textures that exist within our bodies. I began re-creating these forms with felt and then clay, playing with form, texture and colour. The finished pieces are based on T Cells with one single blood cell.





I create vibrant mixed media collages. They tend to be satirical comments on human nature, the life we have created for ourselves, values and behaviours that have become entrenched in our collective conscience, and the consequences and limitations they entail. The starting point is, however, almost always randomness.

The Science

**Bread, bulgur, wine and olive oil:
Food in antiquity**

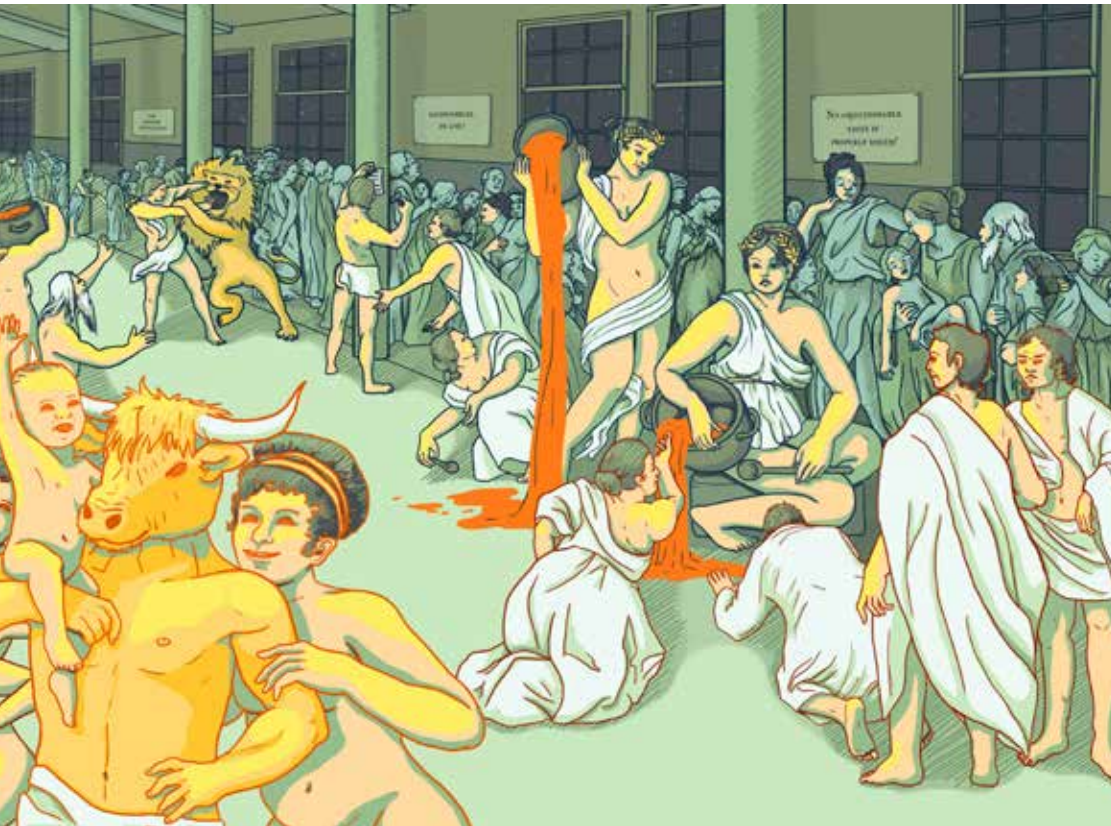
Dr. Evi Margaritis
(Marie Curie Research Fellow, McDonald
Institute for Archaeological Research, UC)

Food production and consumption are key themes in every culture around the world. The basis, now and in antiquity, is arable agriculture and in particular the production of cereals and pulses, which can be transformed into different dishes in a variety of ways. Today we will talk about food production in antiquity, covering not only cultivation and consumption, but also modes and styles in cooking, what were they drinking, and the special role of olive oil both for food and for offerings.

Creative Reaction

First came the reading. Then the thinking. With a little drinking. And then the fog lifted:
We humans haven't really changed!
We still eat, drink, cultivate the same. Our actions and drives are still the same: survival, love, lust, greed, power, status, vanity...
The Realisation by Manuela Hübner
Inspired by the work of archaeologist Dr. Evi Margaritis ("Food in Antiquity")
Artistic influences: Cycladic figurines, early Aegean friezes and ceramics, the Mediterranean, Picasso.





I am an illustrator working mainly in photoshop to create eye-catching digital work characterised by bright colours and strong lines and shapes. My practice is strongly linked to my thirst for knowledge of the world around me and so far includes work linked to mythology, literature, history, technology and science fiction.

The Science

Advertising healthy eating in 1900

Lesley Steinitz
(Ph.D. candidate, Faculty of History, UC)

What foods were 'healthy' in 1900? Lesley will take us back 120 years, to when adverts advised people to drink Bovril and Cadbury's Cocoa for muscle-building, Dr. Tibbles' Vi-Cocoa for stamina (men) and rosy cheeks (women), and Sanatogen to fix nerves shattered by the pressures of modern life. Lesley will discuss the science and fears that underpinned the effective and now often funny adverts for the health foods invented during this 'Age of Decadence'.

Creative Reaction

My illustration is an 'epic tableau' taking inspiration from the greek-influenced advertisements of Sanatogen and including references to characters featured in the advertising of Sanatogen, Bovril and more. The illustration refers to the over-the-top claims of these brands that their products could provide you with strong nerves, powerful physique, increased endurance and intelligence in order to flourish in your work and at home. The concept of transforming the population into an 'ideal' worker, wife, politician etcetera, has sinister connotations when viewed with the knowledge of both the pernicious influence of modern advertising and the warnings inherent in dystopian fiction such as Orwell's 1984; and Lesley Steinitz discussed with me the connections between attitudes towards food/supplements and the politics of the time. Therefore I have deliberately chosen to pastiche the compositional style of religious paintings and the greek-inspired Sanatogen adverts to create a mildly-unsettling parody of the original 1900's Sanatogen advertising images.





I paint so that people can enjoy the natural world from their comfy armchairs, especially if they are unable to go out and see wonderful nature themselves. How fragile is life on our earth - please look after it. I feel strongly about people not knowing what flowers and animals look like. This is the main reason why, when I decide to paint a particular subject, I first find out about it, whenever possible see it in person, get a feel for it, and then try to paint it exactly as it is in its proper environment.

The Science

Guardians of the oyster forest

Dr. Helen J. Scales
(Marine biologist, Institute of Continuing Education, UC)

Deep within mangrove forests of The Gambia, women gather the nation's favourite seafood delicacy: oysters. Thanks to a pioneering community project, the future for these women and the threatened wetlands they depend on looks brighter than it did five years ago. The oyster pickers are now official owners and protectors of the forest and its valuable resources - a first for women in Africa. Helen Scales went to see the women at work and partake in an oyster festival like no other.

Creative Reaction

The Guardians of the Mangrove Oyster. Two Gambian women (one with babe in arms) hard at work shucking oysters, and another showing off her beautiful Festival head attire. All set in a typical mangrove forest, and village, with middens (ancient and new piles of oyster shells) amongst the sunlight and shade.



"Guardians of the Mangrove Oyster" - Original Acrylic on stretched Canvas - 61 x 76cm
www.tinasfineart.uk



Liza Read creates holograms, 3D laser photographs, collaging them with glass, printed materials and wood. Read's artworks investigate our societal relationship with technology, using as reference Dante's Inferno and the circles of Hell.

The Science

How to achieve a social life after death

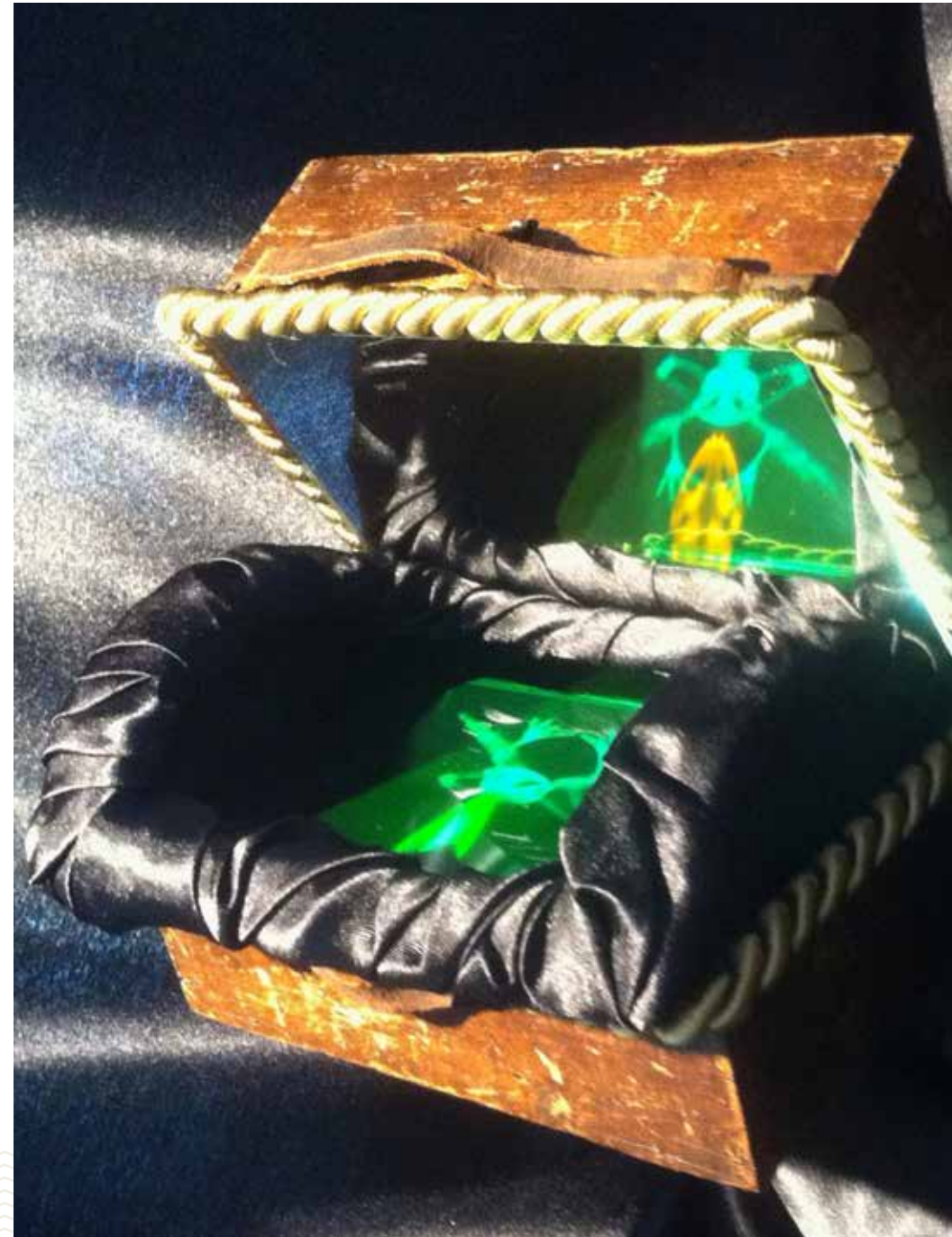
Dr. John Robb
(Reader in European Prehistory,
Division of Archaeology, UC)

People in all cultures would agree that death is a significant biological event, but in many cultures, the dead not only are expected to have a social life, they sometimes achieve this. How does our culture differ in the ways in which we look at the body and its properties, live or not?

Creative Reaction

To illustrate a social life after death, I first spoke with Dr. John Robb about his various approaches to this concept from cultures around the world; from people setting out a dinner place to dine with their dead relative to the act of donating your organs to live on inside someone else. I decided to seek inspiration from the archaeologist's viewpoint. Starting with the bones that remain after we bury the body, I combined this reality with the concept of how we think of the dead. Are our memories a true reflection of the being we knew when alive? Or are they distorted into a likeness of how we perceived that individual?

The resulting artwork is a skeletal 3D hologram appearing within a coffin like box while its image is reflected in multiple similes in a mirror above. I made it tactile and encouraged people to pick it up, to engage and look at it from all angles to appreciate the different echoes from the 3D original image in all its different, often multiple, reflections. Titled 'Limbo' after Dante's First Circle of Hell, this is the place where souls mill around neither in Heaven nor Hell but in eternal transition, a contemplation of our varying perceptions of life after death.





I design and make jewellery at the edge of the fens near Cambridge, England. Many of my works are one-offs, custom made for special occasions. I use traditional techniques, fretsawing, fabrication, filigree wire work. I also work with fine silver clay to make duplicates. Often adding colour with gemstones, enamel and resin. I'm attracted to intricate details and fluid patterns; this comes through in most of my designs. In the last few months my work has been inspired by aerial photos.

The Science

A pint of lava and a packet of pumice, please

**Prof. Clive Oppenheimer
(Prof. of Volcanology, Department of
Geography, UC)**

Ever wondered if you would be here if it weren't for volcanoes? If not, then this diminutive talk is for you. I'll cram in as much volcanology into ten or fifteen minutes as humanly possible. Why volcanoes matter; how your ancestors grew up in their shadow; where to take your next holiday; and how a super-eruption might ruin your day. No tuff questions left unanswered.

Creative Reaction

Angry Mountain Pendant - (sterling silver, gold detail, fiery orange resin, dark oxidized patina). Etched and hand sawn.

Inspired by photos of both the recent Calbuco eruption in Chile which produced stunning undulating ash clouds, and the vast fiery rivers of lava seen in Hawaii's Kilauea volcanoes.





As an artist, I like to show the outsides of things, and how they look. I want to make the paintings better than the original items that sit out in the world. I want my skill to beat photography, so people know a thing is a painting and still react well to it. To that end, I use a lot of knowledge about how forms interact, how humans see, and how we are educated in appreciating beauty. Fortunately, I have a wide curiosity for human brains, physical movements, and biological complications.

The Science

Life was different then – reflecting on sex and gender in prehistory

Dr. Marie Louise Stig Sørensen
(Reader in Archaeology, Division of Archaeology, UC)

We tend to think prehistoric people were just like us, just more primitive and closer to nature. In this talk I question gender relations in prehistory – which of our images about men and women are definitely wrong? What do we actually know about this kind of relations, and why does it matter? To discuss this we need to appreciate the distinction between sex and gender, and appreciate different community compositions due to high child mortality and low average life expectancy.

Creative Reaction

I am a fine artist, working primarily to commission in oils and watercolour. Festivals such as Pint of Science allow me to step outside my usual working methods. Mind the Gap is made in laser cut Duo Perspex, from a vector file.

My first response to the work of Dr Sorensen came in our initial conversation, when I realised I had so many preconceptions that I couldn't even start learning. Mind the Gap was designed to show how even in one generation there is a varying loss of knowledge. We cannot extrapolate from what we know, but we have to uncover our ignorance before we build on it.

Each of the 12 circles has two icons, which are connected somehow, by use, the icon's design, or the whim of the artist. Each icon within the pair should be familiar to at least one age group, but they, or the knowledge of how they are connected, will not be accessible to everyone.



Cambridge Contemporary Dance is one of the first professional dance companies in Cambridge and was established to provide a platform for launching new choreographers, dancers and quality work in Cambridge and further afield. As a company we aim to collaborate with local artists that share a similar vision for creating work which is exciting and accessible to the people of Cambridge, a city that provides a wealth of inspiration for the arts.

The Science

What is it like to be 'come out' to?

Ashley Brooks
(Graduate Teaching Assistant/PhD candidate, Department of Psychology, ARU)

September last year, Daniel Pierce, a 19-year-old college student from Georgia in the United States, secretly filmed himself coming out as gay to his parents. His parents responded by verbally and physically assaulting him, before disowning him and throwing him out of the family home. Yet not all instances of coming out are so traumatic and heterosexuals can react in a multitude of different ways to being come out to and must traverse their own obstacles before arriving at acceptance.

Creative Reaction

Reconcile was made in collaboration with scientist Ashley Brooks and explores through movement the reactions people have to a friend coming out. This is our interpretation of the psychometric scale of emotions that Ashley pieced together as a reflection of his findings. We share with you with a dance film by Anastasia Elizarova, plus a live performance. Movement choreographed and performed by Hannah Spencer with Dancers: Mark Swann, Jun Shepard, Lorenza Toffolon, Chess Boughey, Laura Ortu, Camila Miranda.





Michelle's work combines found materials (books, magazines, packaging, photographs, postcards and other printed ephemera) with painted, drawn and printed elements. Her work alludes to shared memory - cutting-up and re-assembling images from recent history, to reflect contemporary themes and popular culture.

The Science

Psychological perspectives on pornography

Dr. Daragh McDermott
(Senior Lecturer in Psychology,
Department of Psychology, ARU)

In this piece, I will describe a range of issues involved in the psychology of pornography. In doing so, I'll consider research that has examined both actors and user's motivations for engaging with, and consuming from, this industry as well as describing some of my own research that has examined how available pornography presents the impression of youth to its viewers. I will conclude by exploring of on-going research examining gay men's pornography use.

Creative Reaction

I used the subject matter of Pornography as the perfect excuse to work with old Playboy magazines from the 60's. Cutting-up and re-assembling images digitally, working with Daragh's research on both the actor's and user's motivation.





I'm an illustrator and children's books author, and have lived in Cambridge for the past eight years. A compulsive drawer, my work and I are in constant fluctuation between nostalgia and comedy.

The Science

Satellites: the All-Seeing Eye

Peter Fretwell
(Geographic Information Scientist, British Antarctic Survey)

Advances in satellite technology have enabled the British Antarctic Survey and other international groups to find, count and monitor Polar wildlife from space. Here, we showcase their work. Species targeted with satellite imagery include penguins, seals, whales and polar bears. In some cases, such as the emperor penguin, this work has revolutionised our knowledge of the species. We highlight advances in satellite technology, some useful techniques, and discuss the implications for conservation.



Irene Carmen Wilkes born Brisbane, Australia in 1952. She retired from a career in Information Technology in 2010 and took up a career in the Art World. Her favourite technique is underpainting with acrylics, overpainting with water mixable oils, and adding the finishing touches with water colour, and oil crayons, then making a final mark with graphite pencil.

Irene has a colourful and lively dream life. She wakes up every morning from this world with ideas for paintings. If left to her own devices she would be painting from dawn till dusk.

The Science

Beyond Boots: Conservation monitoring without the cold and mud

Dr. Graeme Buchanan
(Senior Conservation Scientist, RSPB)

The UK is unusual in having good bird and habitat monitoring, mainly from volunteers in boots in the field. But these boots don't answer all our questions, and there are fewer boots on the ground in most of the rest of the world. Consequently, we need other methods to inform on conservation priorities and strategies. I'll discuss the present and future of remote sensing for conservation monitoring, illustrated with global examples from the RSPB and BirdLife International.





Born in Dublin, Ireland and now living and working in Cambridge, I have been developing my painting practice since graduating from Rhode Island School of Design in 2001. My work depicts places I have lived in and people who are close to me. Used only as a starting point, my paintings transcend their subject matter and become studies manipulating surface, colour, tone and temperature to convey a different mood or memory in each piece.

I have a Bachelor of Fine Arts in Painting from Rhode Island School of Design where I spent my fourth and final year in Rome, Italy as a member of RISD's prestigious European Honours Programme.

The Science

Monitoring volcanic eruptions and their impacts on climate

Dr. Marie Edmonds
(University Lecturer,
University of Cambridge)

Volcanic eruptions emit prodigious quantities of volatiles into the atmosphere. In our geological past, some eruptions have lasted for millions of years, causing dramatic environmental degradation and even mass extinctions. Today, explosive eruptions cause perturbations to global climate due to the effects of sulfate aerosols on the Earth's radiation budget. I will discuss the scale of impacts caused by volcanic eruptions, how we can reconstruct it and why we should care about it.

Creative Reaction

I aim to capture likeness in my portraits and am interested in how colour affects the psychology and personality of the sitter. It was wonderful meeting Marie and painting her in my home. I work closely with my clients and from photographs to complete each portrait. I must complete my paintings quickly or I lose the spark that first triggered my inspiration. Painting fulfils a fundamental need in me. It serves as an outlet for my ideas and as a reflection of my experiences and emotions.



"Portrait of Marie Edmonds with pyroclastic flow"
Oil on panel - 40 x 50 cm | www.emmacopley.com



I am an Art & Design BA (Hons) graduate, a member of Cambridge Open Studios, and the Cambridge Creative Network. I regularly exhibit at galleries and art events across the region. My clients include both private and corporate collectors.

The Science

Living on the Edge

Dr. Iris Moeller
(Lecturer in Coastal Processes,
Cambridge Coastal Research Unit)

The melting of land-based ice on our planet and the warming of our oceans means that sea level is rising on most of the Earth's coasts. Movements of the land surface alter the rate of this rise but the rising water level is a threat to vast coastal populations. On top of this, storm surges and tsunamis threaten coastal communities as they can cause extreme coastal flooding and erosion at very short notice. Hear the basic facts about sea level rise, storm surges and tsunamis, as well as how we can protect ourselves from their impact using the latest scientific insights into how water flows around and over our shorelines, as well as highlighting the change in policy and planning required to make our coastal regions 'future-proof' – something that is not without major challenges...

Creative Reaction

My practice explores my response to the natural landscape drawing inspiration from this ever-changing environment. A life-long fascination with the sea and coastlines, the Pint of science "Creative Reactions" project has offered me a wonderful opportunity to explore further the movement of the sea along our shorelines, and employ these ideas to enhance my art practice creating bold, and engaging artworks. To the viewer my paintings convey a fusion of vibrant colour with a feeling of sensitivity.

The starting point for this artwork was video footage of the wave tank experiment conducted by Dr. Iris Moeller and her team. Studying how salt marsh plants help to calm the flow of water as it approaches the shoreline - a sustainable solution to wave calming. Working with the imagery, patterns and movement of the salt marsh in the water, I developed my composition by putting layers of paint onto the canvas, then scrapping away to reveal and then reapplying. With gestural strokes of my palette knife, building layers and texture, I scribed through the paint to create the movement. My practice brings both my inner soul and physical being together as I create the work.





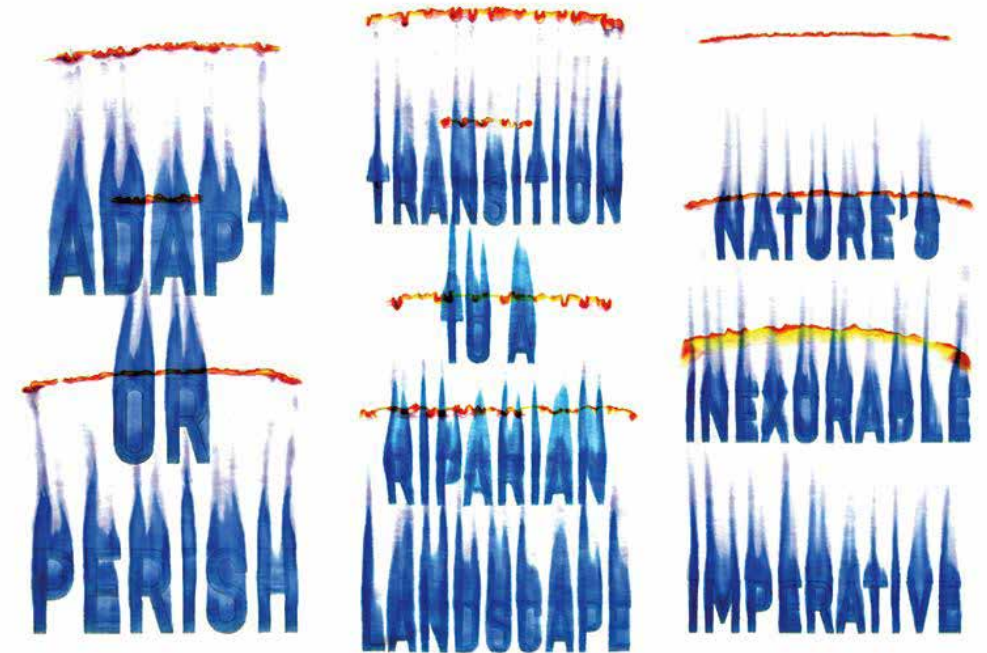
Gareth is a freelance graphic designer providing cross-media design solutions including advertising and brand identity. His clients have included Reebok, Tommy Hilfiger, Helly Hansen, Faber & Faber, The Guardian, Addenbrooke's and St Bartholomew's Hospitals, the Britten Sinfonia, Frontier Economics, Channel Four and the BBC.

The Science

Adapting to the inevitable

Edward Barsley
(PhD Researcher in the Centre for Risk in the Built Environment, University of Cambridge)

This talk discusses the proposition of a town that remains open to the sea whilst safe from it. Our coastline serves as a crucial economic, transport, cultural, recreational and agricultural threshold; however, with the impacts of climate change, this boundary is facing increasing threats and pressure to adapt. Here I discuss a variety of adaptation strategies applicable to coastal communities worldwide. These have a range of benefits as we move towards an increasingly uncertain future.





Structural lines and shapes are manipulated within my paintings to create an altered sense of reality, where the beauty and drama of the landscape is heightened. I use layers of paint and marks to capture the mood and atmosphere of the landscape, manipulating areas of the surface to become translucent and vaporous, almost vanishing into the sky. I am inspired by the sublime within the history of landscape painting from Turner to John Martin and John Virtue.

The Science

The rivers wrath

Andy Chia-An Ku
(PhD Candidate, Department of
Geography, University of Cambridge)

Floods account for 40% of all natural disasters in the world and 50% of the deaths they cause. Besides, extreme weather events associated with climate change may significantly enhance the magnitude of runoff, because of higher intensity of rainfalls during a relatively shorter period of time, and consequently result in greater flood risks in urban areas. This talk will focus on how computational modelling and geo-spatial analysis could help to understand the behaviours and the potential negative consequences of river flooding in urban areas, as a foundation for future flood risk mitigation planning.

Creative Reaction

It is called 'Xenotopia' meaning 'foreign place'.

It is a response to the mismatch and conflict between man made and natural environments. It depicts a fragile world where flood defences have been defeated by nature and flooding has reclaimed the urban and rural landscape. It represents our hopes and fears about the future of our urban spaces and the threat of natural disasters caused by climate change. The ambiguous landscape depicted describes somewhere that is neither water or land or urban or rural. The canvas surface has been manipulated with diluted oil paint stains that flow, bleed, run back, breakdown, erode, cover like water and flooding itself. Painted layers and drawn lines from sections of maps of Taipei and architectural plans for future ways of living within nature and managing flooding come together to create a metaphysical hallucination brought about by material illusion.



My artwork is inspired by nature, looking at the forms and patterns in the landscape through to the tiniest details of a leaf or a petal. Creating art for the Pint of Science Festival has focused my attention on the relationship between plants and pollinators and the diversity of flowers.

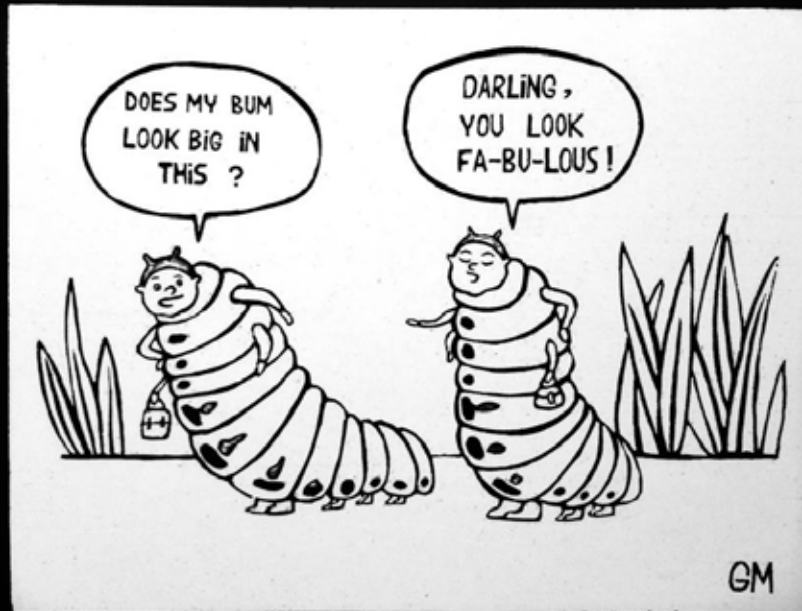
The Science

Using tricks of the light for successful pollination

Dr. Beverley Glover
(Director of Cambridge University
Botanic Garden. Prof. of Plant Systematics and Evolution)

Flowers and the animals that pollinate them interact at a single key point – the petal surface. It is this single layer of tissue that provides the visual surface that advertises nectar rewards. It is on this layer of tissue that pollinators land. And it is often from this layer of tissue that the scents that attract pollinators over longer ranges are released. Our recent research has focused on the optical effects of the petal surface. The majority of petal morphologies will act to support certain plant/pollinator interactions but not others, leading to greater reproductive isolation and speciation within the flowering plants. I will present recent work on the petal surface, taking molecular genetic, evolutionary and pollinator behavioural perspectives.





I am an artist, illustrator, cartoonist and musician. I am French. I like to illustrate poems and songs, making collages using old newspapers, music parts and wall paper prints. I find inspiration in everyday life, travelling and music. My illustrations are humorous and poetical, often anecdotal and autobiographical. There is a lot of animals and nature in my pictures, particularly the sea, where I am from. And woman are often a central subject.

The Science

How Not To Be Eaten

Dr. Hannah Rowland
(University Lecturer and Fellow,
University of Cambridge)

Caterpillars that morph into snakes when under attack, octopuses that can disguise themselves as poisonous lion fish, and spiders that hide from predators by masquerading as bird poo. Mimicry is one of the most striking examples of evolution in action. For over a century scientists have wondered how mimicry works, but it's only recently that we've begun to unlock its secrets. We'll go on a journey from Darwin and Wallace to cutting edge research on mimicry and find out how not to be eaten.

Creative Reaction

Being a part of Creative Reaction with CCN for the Pint of Science festival, has been a great experience, I've been having a lot of fun with the subject (The scientist Hannah Rowland's studies of animal behaviour in self-defense, "How not to get eaten") I have to respond to what challenges me to create fun and original pictures. Like my latest piece: "Ida & Joe", illustrate a Lyra bird and a Chainsaw having trouble communicating. It says a lot about the Lyra bird's ability to imitate every sounds in her surrounding, such as chainsaw and cameras. But also troubles between men and women to communicate.



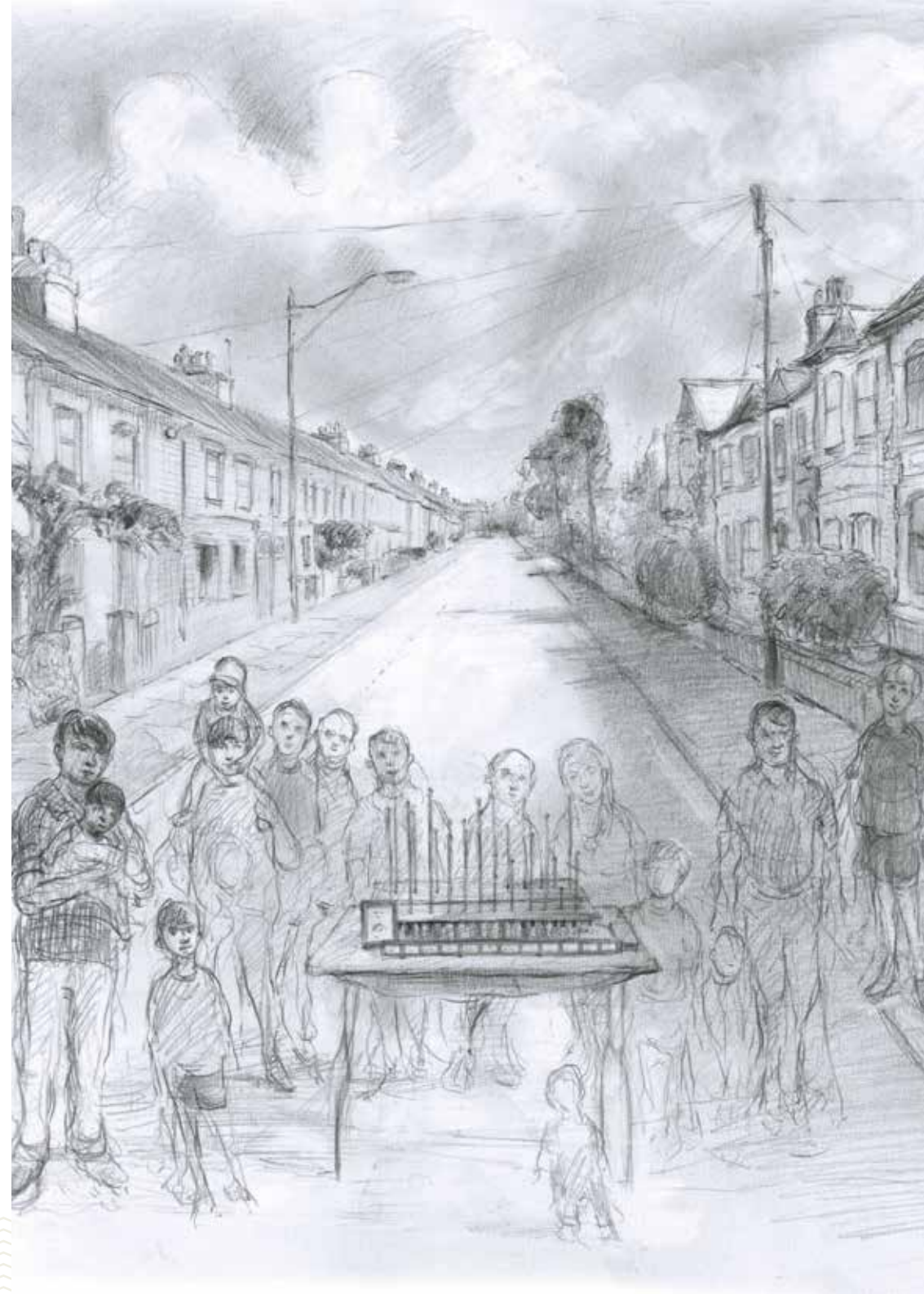
I am a narrative Illustrator who loves drawing people, and I especially enjoy focussing on character, atmosphere and light. I was born in Manchester, am Jewish, and studied at Anglia Ruskin University. My commissions have included 'Jonathan Strange and Mr Norrell' by Susanna Clarke and 'The Black Tulip' by Alexandre Dumas.

The Science

Data Matters: A sociologically oriented study of data on Tenison Road

Dr. Alex Taylor

How does data matter to us? How does it really make a difference to daily life, to life on the street? In this talk, we'll present insights gleaned from a year-long study with the residents of Tenison Road, in Cambridge, and how they've made sense of and used their own data. Detailing a number of engagements and design interventions over the last year, we'll show data to be something that is tightly bound up with Tenison Road's ideas of community and place. Data, we'll show, matters when it takes shape in the form of things and knits its way into everyday life.





Sally Stenton plays with a movement back and forth between analogue and digital processes. The work for Creative Reactions is inspired by the question of how digital models of intelligence have originated and evolved, and references qualities such as intuition, contemplation and self-reflection, that may be lost in the process of translation. She invites people into the artwork by sending a postcard as an alternative to email.

The Science

Artificial Intelligence : A singularity unlikely proposal

Dr. Sean Holden (Senior Lecturer in Computer Science)

It is easy to get publicity for Artificial Intelligence right now: one shouts "SINGULARITY!" and waves one's arms about. However, Sean does not believe we will be seeing human-level AI in our lifetime, and in this talk he will explain why.



"Cumulative Errorö" - Pinhole Photograph - 21 x 17 cm - Edition of 6
www.sallystenton.com



Veta Gorner is a professional artist-printmaker and associate member of the Royal Society of Painter-Printmakers. She works across numerous printmaking media producing editions of etchings, silkscreens, lithographs and artist's books.

The Science

How next-generation DNA sequencing works, and how it is revolutionising medicine

Dr. James Hadfield

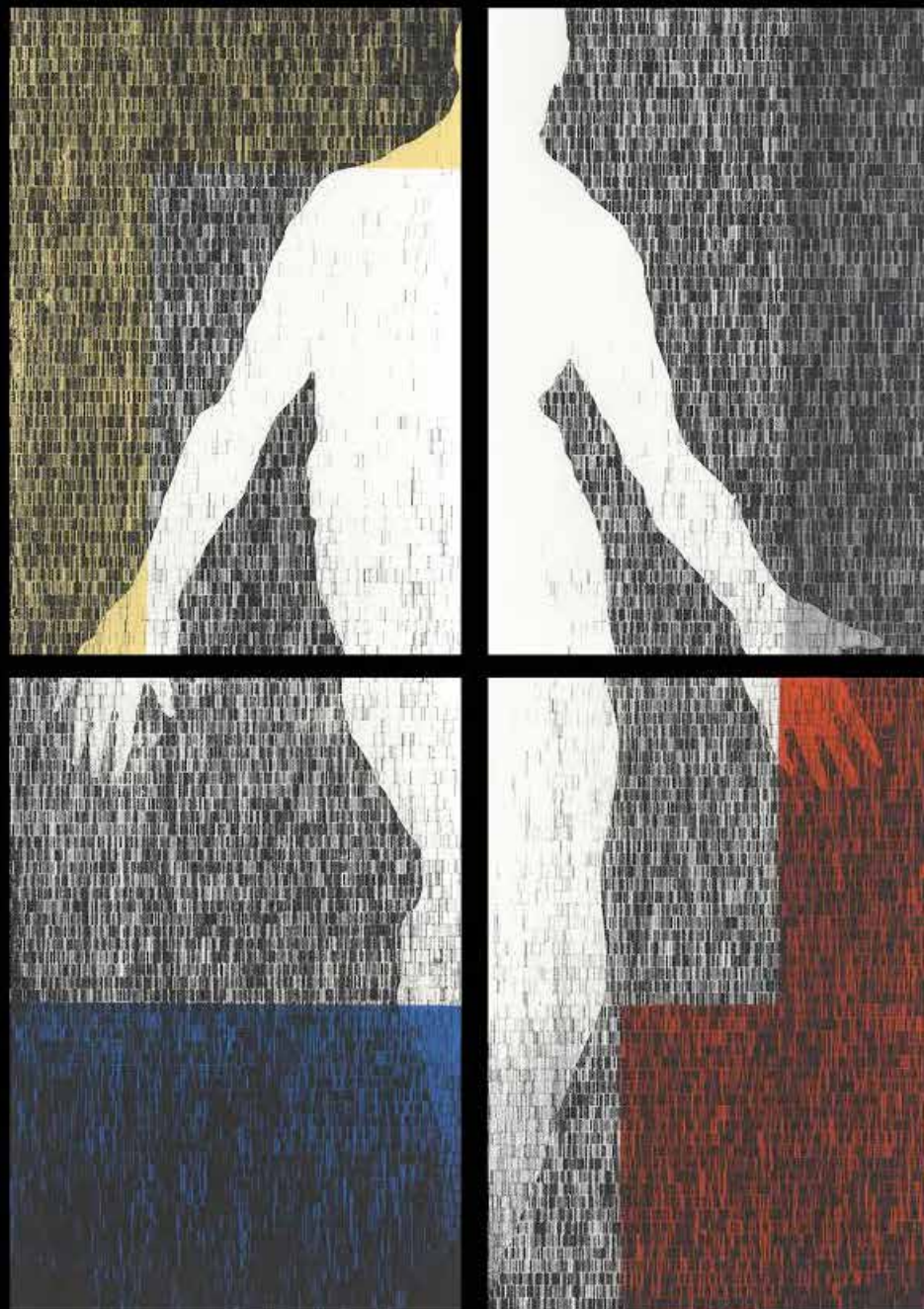
James explained the basics of DNA, Cancer and Genomes and introduced Illumina next-generation sequencing and circulating DNA as methods/ concepts. He then discussed the flood of data they are producing in their laboratory; and gave examples where next generation sequencing is impacting cancer medicine.

Creative Reaction

DNA is one of the greatest science frontiers of the XXI century.

If genome sequencing explains human biology, does it define humankind? Is it pure science or a new religion?

Will the knowledge of the life's components help us reclaim the faith in humanity and celebrate its natural diversity and complexity. Could it promise salvation?



"Life Processor" - Silkscreen print - 70 x 90 cm - Edition of 3



Through art I am driven to delve into the core of what lies underneath the surface, to capture the essence that enlivens the physical world and to communicate the things that prove that life is nothing less than a mysteriously magical experience.

The Science

Of mice and men and dolphins: understanding the evolution of gene regulation in mammals.

**Dr. Camille Berthelot
(Computational Biologist)**

Mammals share the vast majority of their gene repertoires, so what makes a cat so different from a whale? It has long been thought that the larger part of differences between species is encoded in the sequences that orchestrate and regulate the expression of their genes, rather than in the genes themselves. However, these regulatory sequences are difficult to detect and decipher in mammalian genomes. Significant advances in genomics technology are now allowing us to probe regulatory sequences experimentally, and have

changed our understanding of how these sequences work and evolve. I will explain how we made use of high-throughput sequencing technology to shed new light on the evolution of gene regulation in mammals.



Claire has a science degree and a first-class honours in Fine Art and she is interested in the parallels between these two disciplines. She combines her own art practice alongside her work as a Lecturer in Printmaking at a local college. Claire is a Print Fellow at the Digswell Arts Trust in Hertfordshire and exhibits her work across England.

The Science

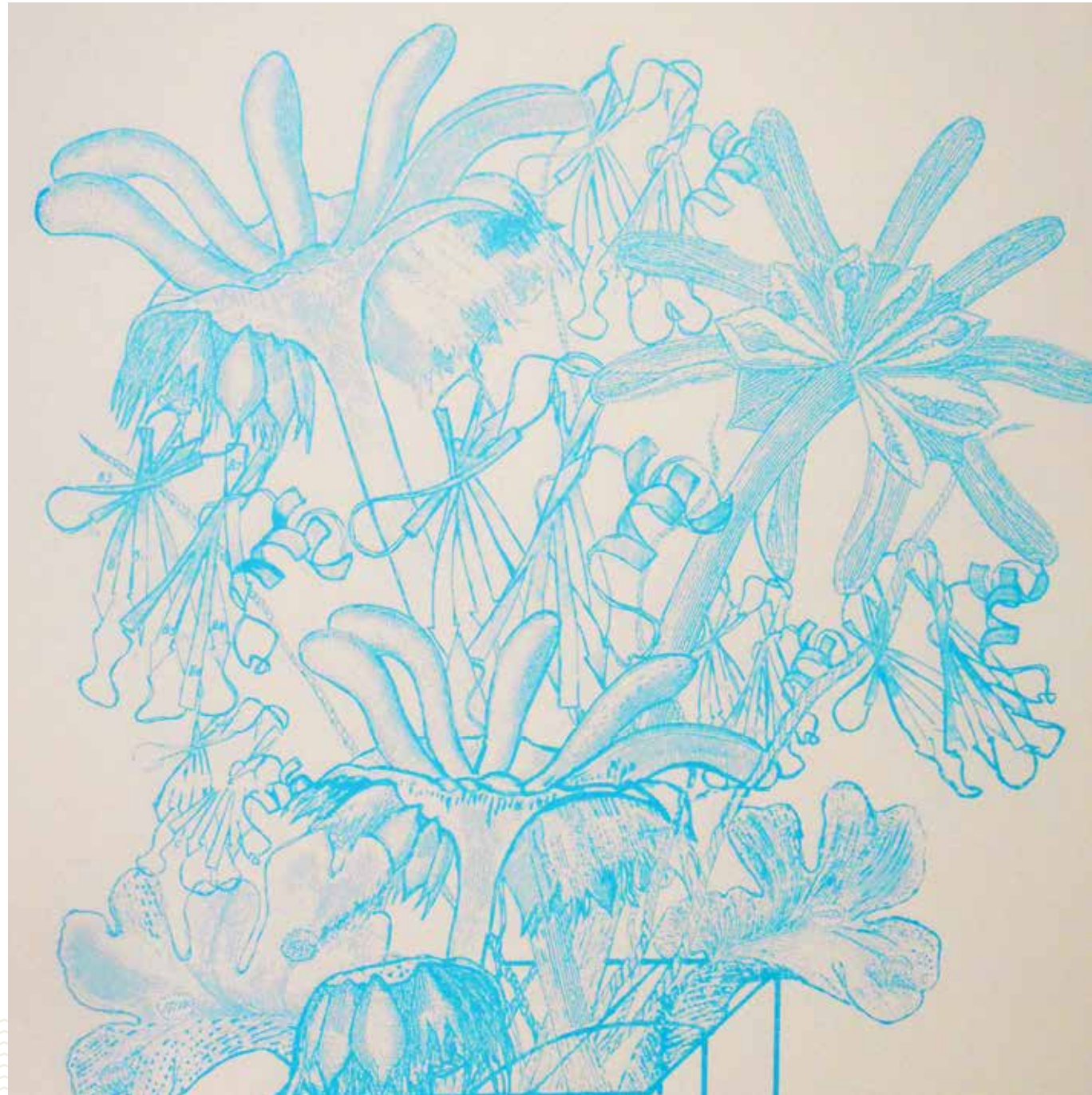
Engineering life with synthetic biology

Jenny Molloy
(Coordinator of the Synthetic Biology Strategic Research Initiative and OpenPlant at the University of Cambridge)

Synthetic biology allows us to design, redesign and construct biological pathways and systems. We can harness this to make drugs, energy sources, materials and biological sensors or even computers. How is a spirit of making and inventing changing our perspective on biology and what does the future hold for these technologies?

Creative Reaction

Marchantia polymorpha – the simple liverwort weed – has been elevated to a formal still life arrangement to reflect its importance as a major new system for analysis and genetic engineering. Botanical drawings are juxtaposed with molecular modelling ribbon diagrams of the plant which, in themselves, look like intricate flower heads. As an appropriate 'vase' for the still life arrangement, the cuboid diagram showing Errera's Rule (1888) has been used. Errera's rule describes cell division and underpins current experimentation in plant development.





Organisers

Pint of Science and Creative Reactions was a collaborative effort, involving many people, working long hours for nearly nine months. We would like to acknowledge all the fantastic organisers for their dedication to making Pint of Science in Cambridge the success it was.



Sarra Achouri, Matteo Andreozzi, Sanna Balsari-Palsule, Flaminia Bartolini, Mickey Batchelor, Valentina Borgia, Suzanne Buttar, Armando Carlone, Mauro Ciacchio, Sarah Connors, Paul Coxon, Julian Dumortier, Tamara Fanjul, Roberto Fava, Josselin Gautier, Maria Barreira Gonzalez, Julia Gottwald, Stacey Gould, Michael Harris, Vicki Highland, Julie-Anne Hogbin, Christy Hung, Stefano Iantorno, Giulio Lucarini, Charlotte Macleod, Crystal McClain, Sara Méndez, Marco Michelutto, Carme Mont, Xavier Jordà Múrria, Davide Natalini, Clara Novo, Christian Owusu, Roberto Pasqualino, Craig Pearson, Debs Roebuck, Lucia Romero, Maria Rostovskaya, Laetitia Schwab, Manos Johan Hanssen Seferidis, James Stewart, Stanley Strawbridge, Meghan Strong, Lorenza Toffolon, Patricia Vazquez, Sara Xoubanova.

What would a festival in pubs be without the pubs?

We would like to thank this year's participating pubs for hosting us:

The Architect, The Boathouse, Cambridge Brewhouse, The Castle Bar, Panton Arms, The Maypole.

We would like to thank all our generous **national** partners who supported Creative Reactions and Pint of Science in 2015

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We would like to thank all our generous **local** partners who supported Creative Reactions and Pint of Science in 2015 in Cambridge

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www.pintofscience.com