

2020



UNIVERSITY OF SOUTH AUSTRALIA
Images of Research Calendar

unisa.edu.au/research



University of
South Australia

Welcome



VIRTUAL PERCEPTION

Brandon Matthews, PhD Candidate

Humans tend to believe what they see, even when it doesn't align with their other senses. Through the lens of virtual reality, Brandon Matthews explores controlling people's perception of the world, right down to the position of their own hand.

**SEE OUR
RESEARCH
COME TO LIFE**



If you see a QR code in this calendar, scan it with the Eyejack app and see our new videos of research jump off the page.

Download Eyejack from the App Store or Google Play.

At UniSA our unstoppable research is inspired by challenges and opportunities, partnered with end-users and communities, and underpinned by excellence.

I am delighted to showcase, and share with you, images and videos generated from research activities at the University of South Australia (UniSA). At UniSA our research is inspired by challenges and opportunities, partnered with end-users and communities, and underpinned by excellence. Collectively, we are unstoppable in our pursuit of ideas and solutions that make an impact.

The imagery and video snapshots exhibited in this calendar, which were entered into the University's 2019 Images of Research Competition, highlight the diversity and breadth of our research. These images tell a personal story about the research we do at UniSA and the people who make it happen.

At UniSA we take pride in our effective partnerships with end-users. Our researchers work collaboratively right from the conception of a research idea, allowing our research directions to be shaped by the opportunities and challenges our partners face. Our key to success is how well we listen to our partners and community and understand fundamental drivers and issues. Through this process we create expert research teams that deliver ground-breaking yet practical solutions.

I hope you enjoy these images.

Professor Simon Beecham
Deputy Vice Chancellor: Research and Innovation

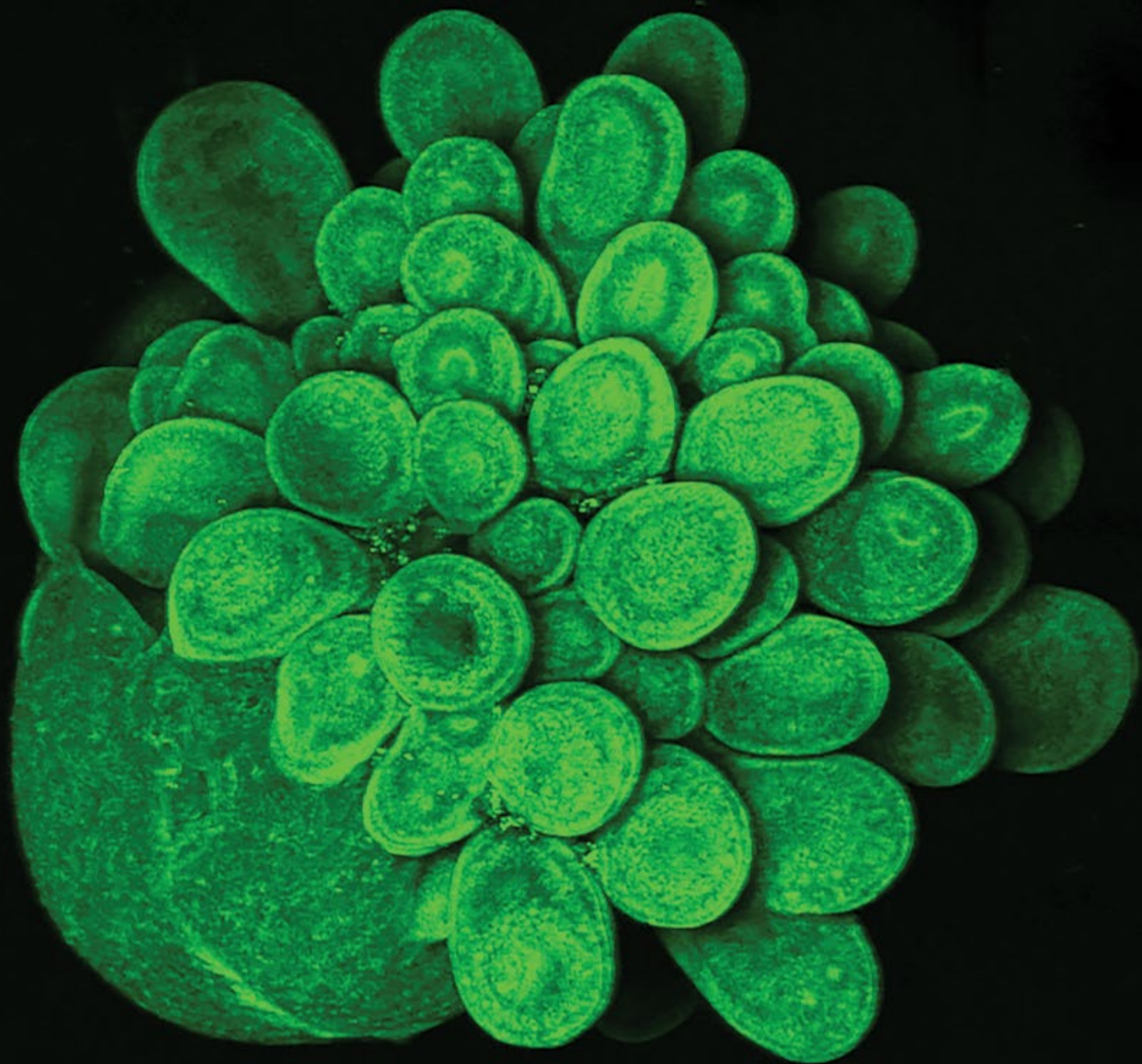
Cover image:

A BLOOMING MINI BRAIN
1ST PRIZE WINNER

Dr Mariana Oksdath Mansilla,
Research Associate, Centre for Cancer Biology



University of
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January

Sun	Mon	Tues	Wed	Thur	Fri	Sat
			1 <i>New Year's Day</i>	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26 <i>Australia Day</i>	27 <i>Australia Day Holiday</i>	28	29	30	31	

A BLOOMING MINI BRAIN 1ST PRIZE WINNER

**Dr Mariana Oksdath Mansilla, Research Associate in
Tissue Biomechanics & Organ Function, Centre for Cancer Biology**

Dr Mariana Oksdath Mansilla's image captures a 28-day-old human brain organoid growing on a scaffold that she 3D-printed in the laboratory. Mansilla's uniquely designed scaffold supports the development of a 3D culture comprised of self-organising stem cells that mimic the fetal development of the human brain - whose application could be used in personalised treatments for brain cancer patients.



**University of
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February

Sun	Mon	Tues	Wed	Thur	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

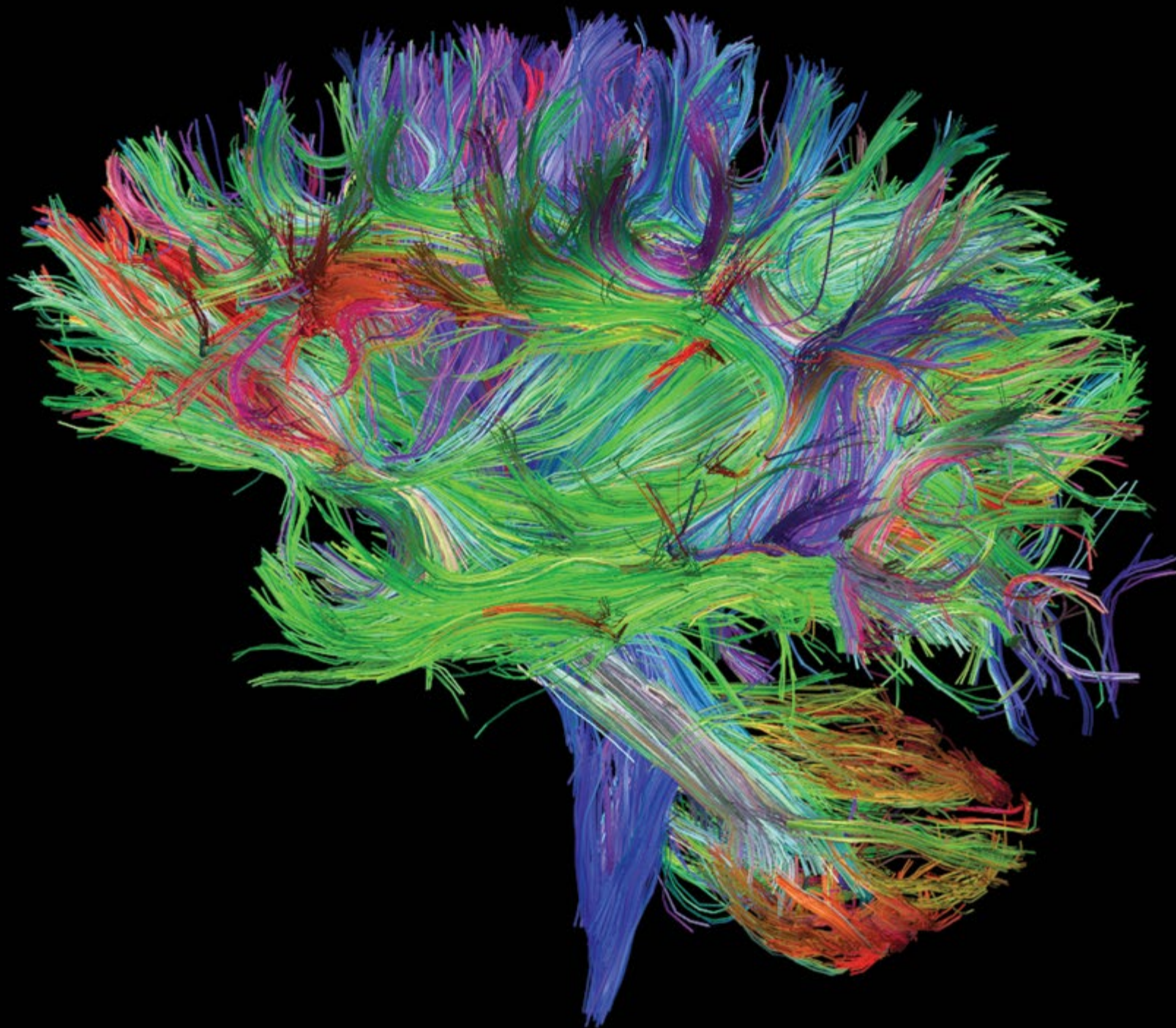
STABILISING LOOSE SAND FOR A SUSTAINABLE FUTURE 2ND PRIZE WINNER

Isaac Ahenkorah, *PhD Candidate*

Isaac Ahenkorah's image demonstrates the nature of soil, particularly sand, where in its loose state it reveals the ethos of geotechnical engineering - the challenge of stabilising loose sand for a sustainable future.



**University of
South Australia**



March

Sun	Mon	Tues	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
8	9 <i>Adelaide Cup Day</i>	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

BUILDING BRAIN PATHWAYS (VIDEO) BONUS PRIZE WINNER

Dr Brenton Hordacre, NHMRC Early Career Research Fellow

Dr Brenton Hordacre's research investigates treatments to enhance arm function recovery following a stroke. This video reveals through a series of images captured using magnetic resonance imaging (MRI), the individual brain pathways, and the vertical bundle of pathways called the corticospinal tract (indigo) which carry the commands that control arm movement. Its proper functioning is an important factor in stroke recovery.

Scan the QR Code
with Eyejack and
watch the video.





April

Sun	Mon	Tues	Wed	Thur	Fri	Sat
			1	2	3	4
5	6	7	8	9	10 <i>Good Friday</i>	11 <i>Easter Saturday</i>
12 <i>Easter Sunday</i>	13 <i>Easter Monday</i>	14	15	16	17	18
19	20	21	22	23	24	25 <i>Anzac Day</i>
26	27	28	29	30		

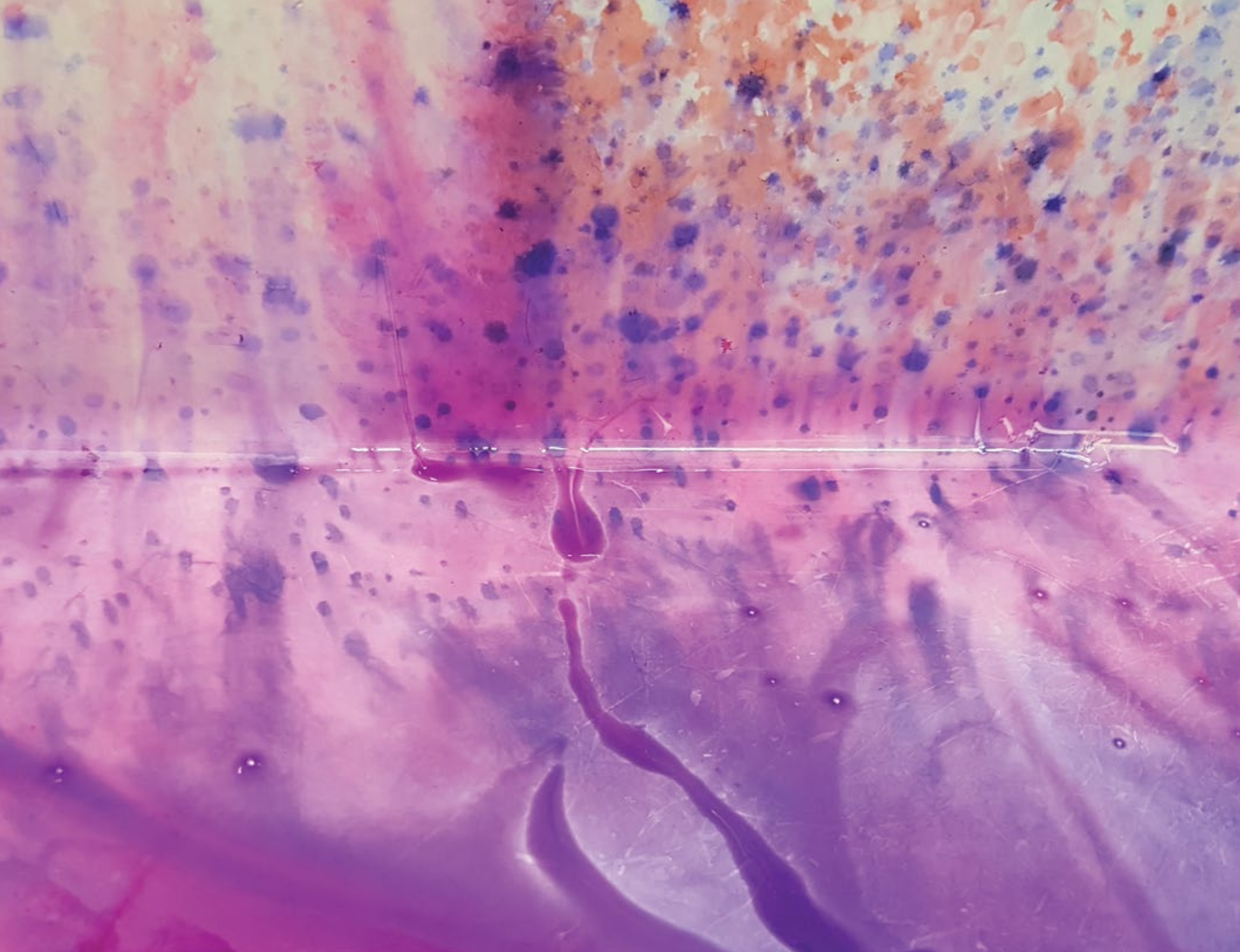
FIBRE-BASED MICROFLUIDICS PEOPLE'S CHOICE WINNER

Dr Azadeh Nilghaz, Research Associate, Future Industries Institute

At first glance you may see a mini dinosaur looking for food however what you are actually seeing is a single cotton fibre under magnification showing natural wax impurities on the fibre wall. This image reveals in detail Dr Azadeh Nilghaz's research, where a simple fibre is about to be transformed into a microchannel, which can be used as the basis for low cost biomedical diagnostics.



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May

Sun	Mon	Tues	Wed	Thur	Fri	Sat
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

WATERS OF PATHOLOGY

Gink Yang, PhD Candidate

Gink Yang's image captures the process where haematoxylin and eosin (H&E) staining is used to assess the severity and progression of tumours and wounds. It is a simple but crucial process that's often overshadowed by other complicated procedures. This image details the elegant and velvety watercolours of H&E and represents the unsung heroes in the scientific world.



**University of
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June

Sun	Mon	Tues	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
7	8 <i>Queen's Birthday</i>	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DIRTY HANDS MAKE FOR CREATIVE MINDS

Kylie Dankiw, Academic Researcher

This image celebrates the simple pleasures of childhood that are being lost to screen time, social media, and safety concerns in our modern world. Kylie Dankiw's research investigates the importance of nature play and how it should be encouraged - as it unleashes a child's imagination, stimulates creativity through diverse sensory experiences, and helps them collaborate, interact and negotiate with others.



**University of
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July

Sun	Mon	Tues	Wed	Thur	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

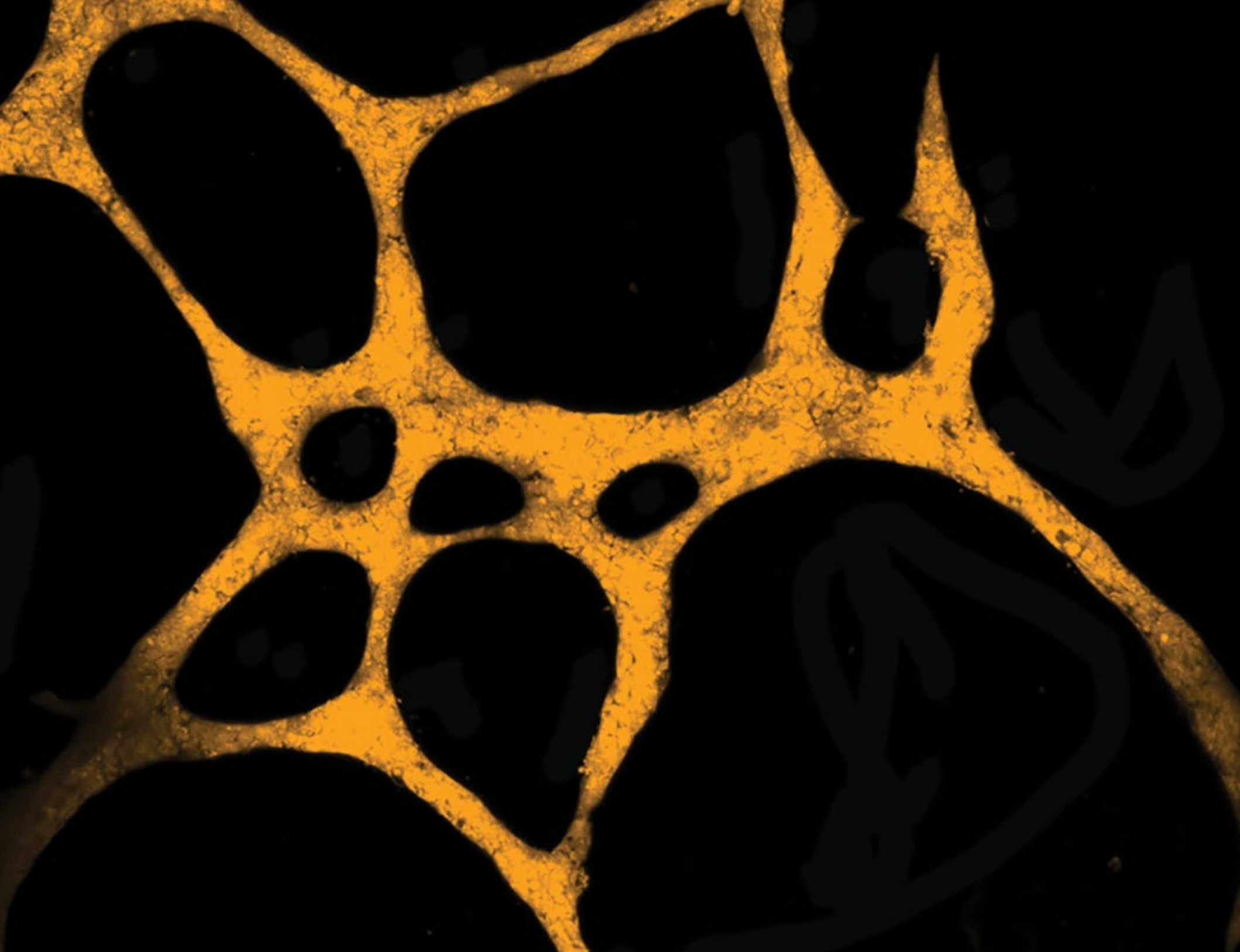
IT TAKES A VILLAGE

Kelly Ryan, *PhD Candidate*

Kelly Ryan took this photo of her son when he first came to live with her in out-of-home care. He looks out over Adelaide from the top of Lonely Hill. Ryan states that 'he and his sister are the inspiration for my research into child protection law. Fortunately for us, we are now their legal guardians'.



University of
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August

Sun	Mon	Tues	Wed	Thur	Fri	Sat
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

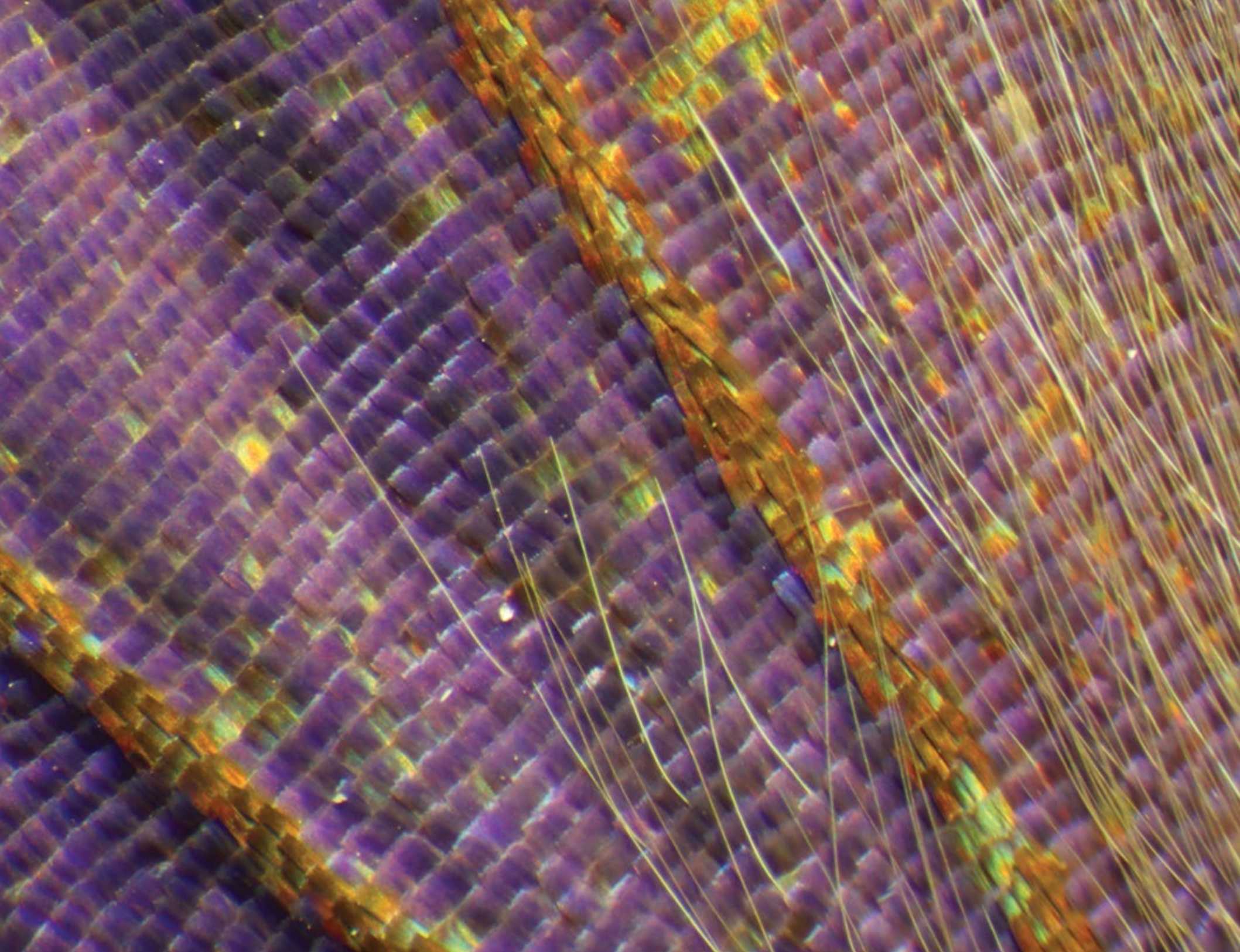
THE TUMOUR NETWORK

Kay Myo Min, *PhD Candidate*

Cancer cells can form blood vessel-like structures to gain access to the blood supply. This process is known as vasculogenic mimicry and it is seen in highly aggressive forms of solid tumours and is correlated with poor patient survival rates. Kay Myo Min's research investigates the molecular signalling pathways involved in the growth and spread of cancer.



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September

Sun	Mon	Tues	Wed	Thur	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

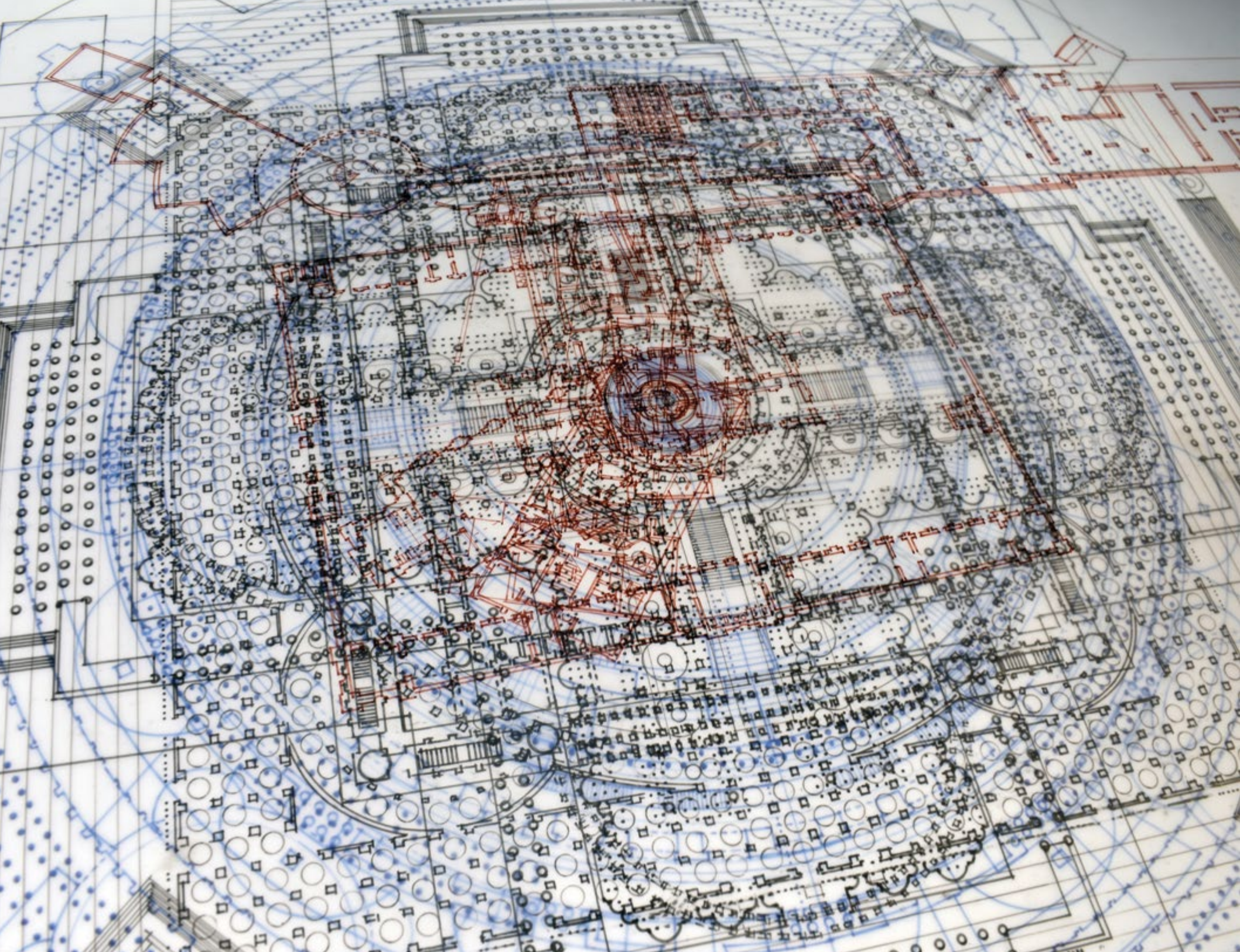
WHOSE SCALES ARE THESE?

Dr Eli Moore, Adjunct Research Fellow, Centre for Cancer Biology

A butterfly wing highlights the human eye's limitations. Dr Eli Moore's research in nanotechnology demonstrates that it is important to understand objects beyond what the eye can see – as in the case of the butterfly wing - these colours are created by the scales' nano-size ridges. Moore observes that 'Nature is full of design elements that can help produce better materials in the future'.



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October

Sun	Mon	Tues	Wed	Thur	Fri	Sat
				1	2	3
4	5 <i>Labour Day</i>	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

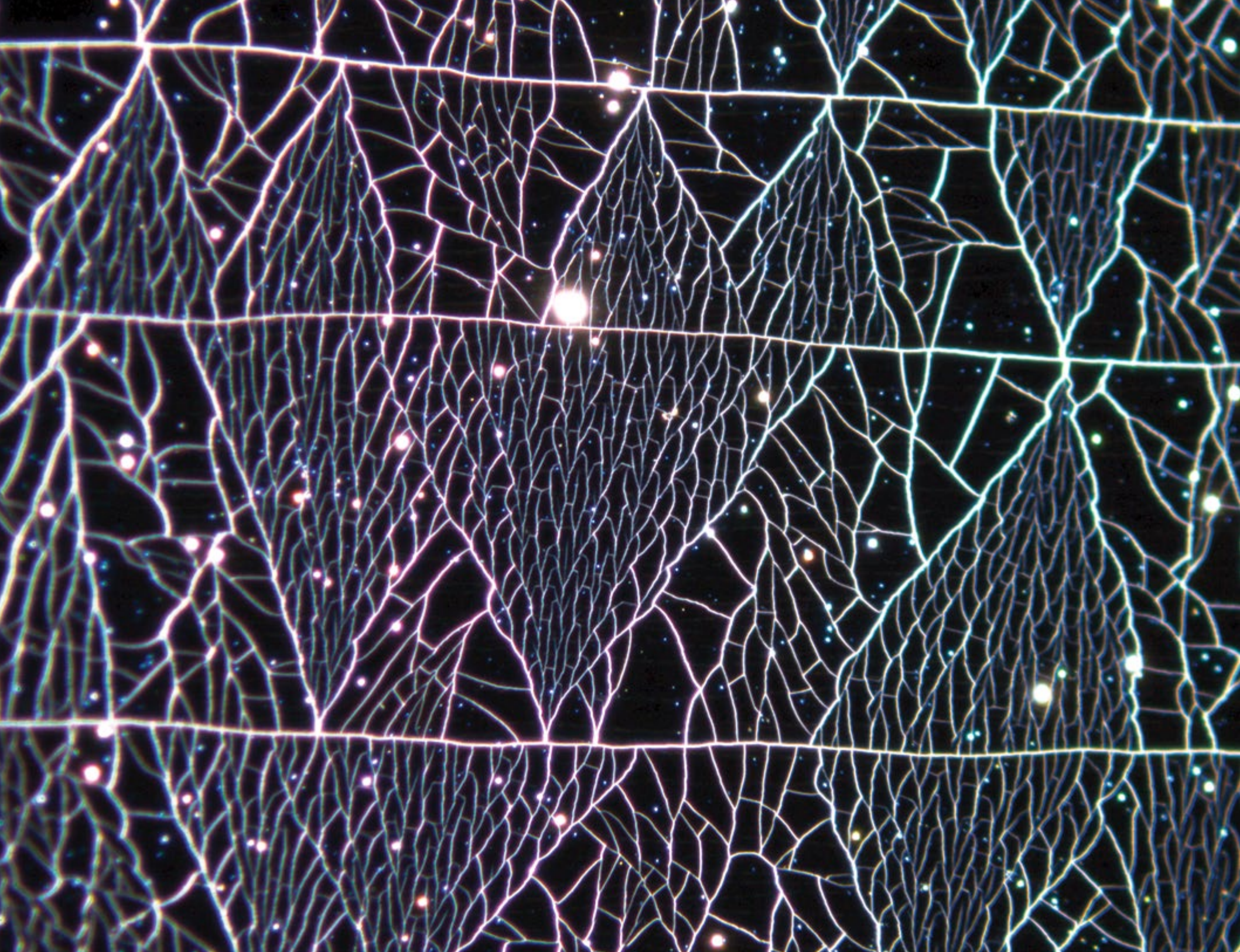
MEGALOMANIACAL PLANS: CONVERSATIONS ACROSS 236 YEARS

Dr Rachel Hurst, *Senior Lecturer*

Hand-traced, superimposed archival drawings from the UniSA Architecture Museum and Bibliothèque nationale de France, bring together the works of influential 18th century French architect Étienne-Louis Boullée with Australian projects of similar type and intent. Dr Rachel Hurst's research tests how potentially obsolete forms of architectural representation might be used in new ways and investigates how architecture-specific processes differ from scientific processes as forms of enquiry and production.



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November

Sun	Mon	Tues	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

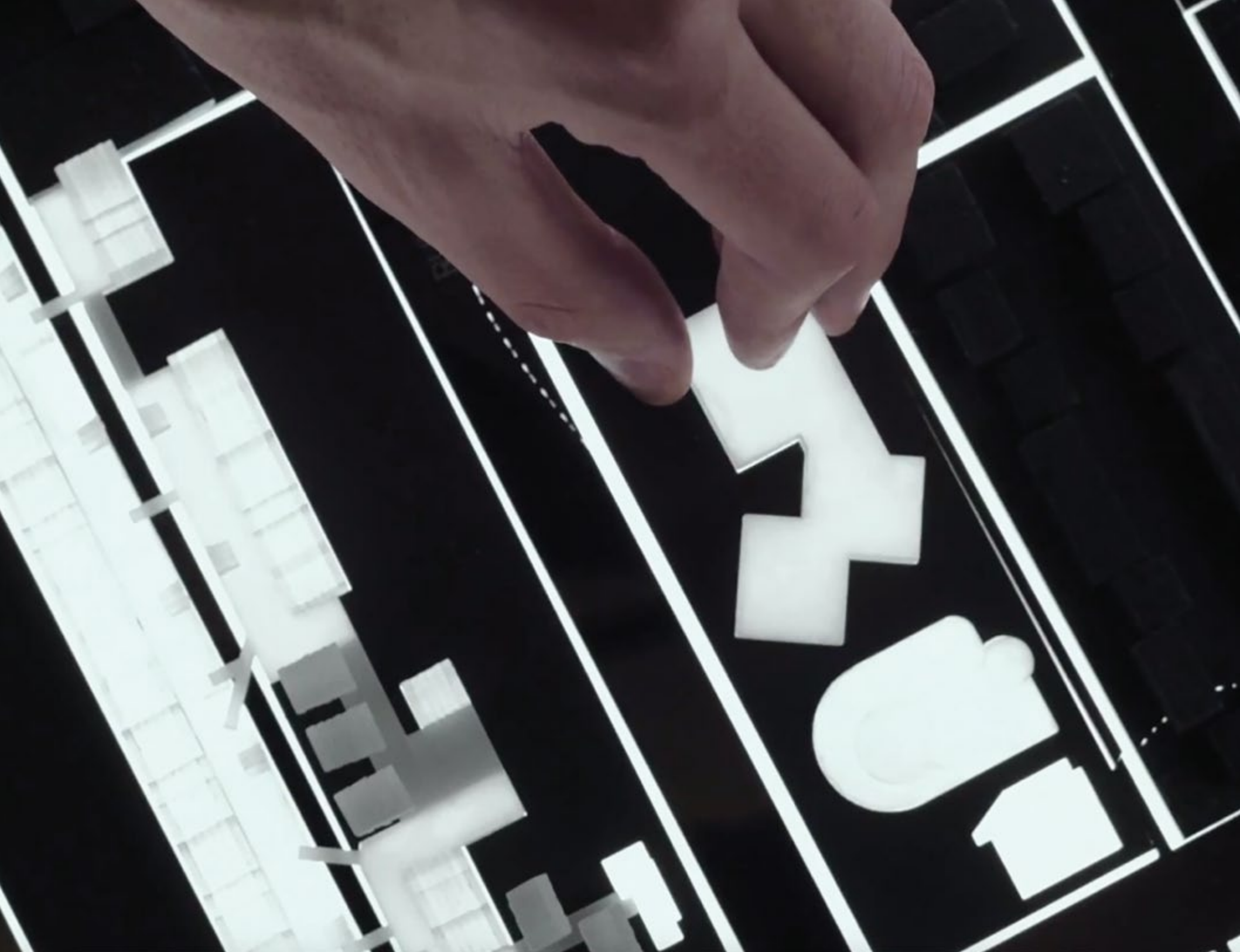
THE CRACKED SURFACE

Dr Bastian Stoehr, Adjunct Research Associate, Future Industries Institute

Dr Bastian Stoehr's image captures a delta of cracks in a 40 nanometer-thin layer of chrome which was deliberately caused by prestressing the substrate. This new decorative and functional coating will enable the integration of radar sensors into future autonomous cars. Since the coating is not conductive on a macroscopic scale, radar radiation can pass through it - allowing it to act as a decorative feature and a weatherproof covering of radar sensors at the same time.



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December

Sun	Mon	Tues	Wed	Thur	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24 <i>Christmas Eve</i>	25 <i>Christmas Day</i>	26 <i>Boxing/ Proclamation Day</i>
27	28 <i>Boxing Day/ Proclamation Day Holiday</i>	29	30	31 <i>New Year's Eve</i>		

ILLUMINATED: KENT TOWN URBAN INTERVENTIONS (VIDEO)

Dr Katica Pedisic, Lecturer

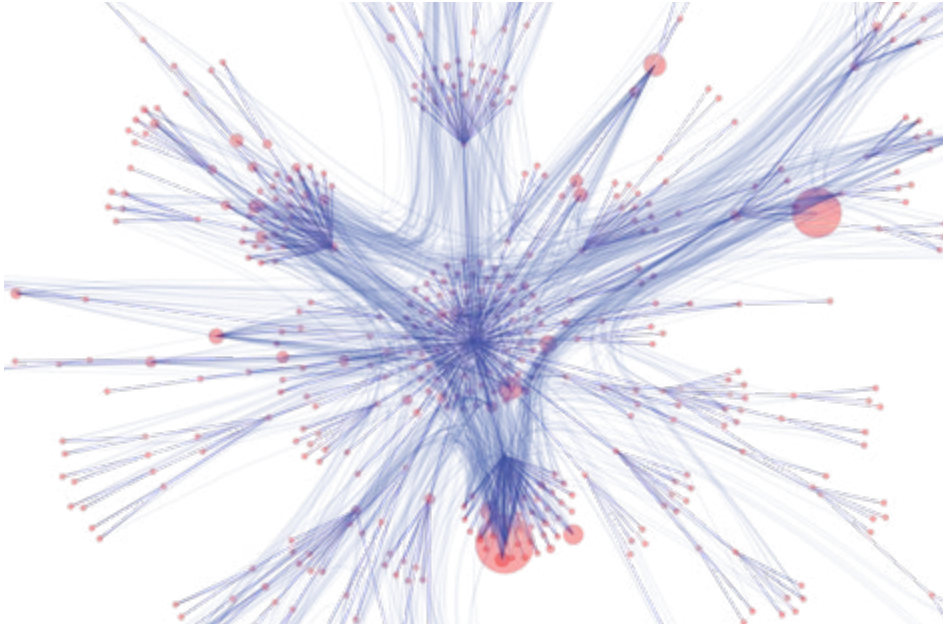
This video is an excerpt from a film that demonstrates practice-based research in a real-world studio by Master of Architecture students from the University of South Australia. It illuminates students producing and operating large scale models of the inner-Adelaide suburb of Kent Town, as an urban laboratory for the Healthy Cities agenda.

Scan the QR Code
with Eyejack and
watch the video.



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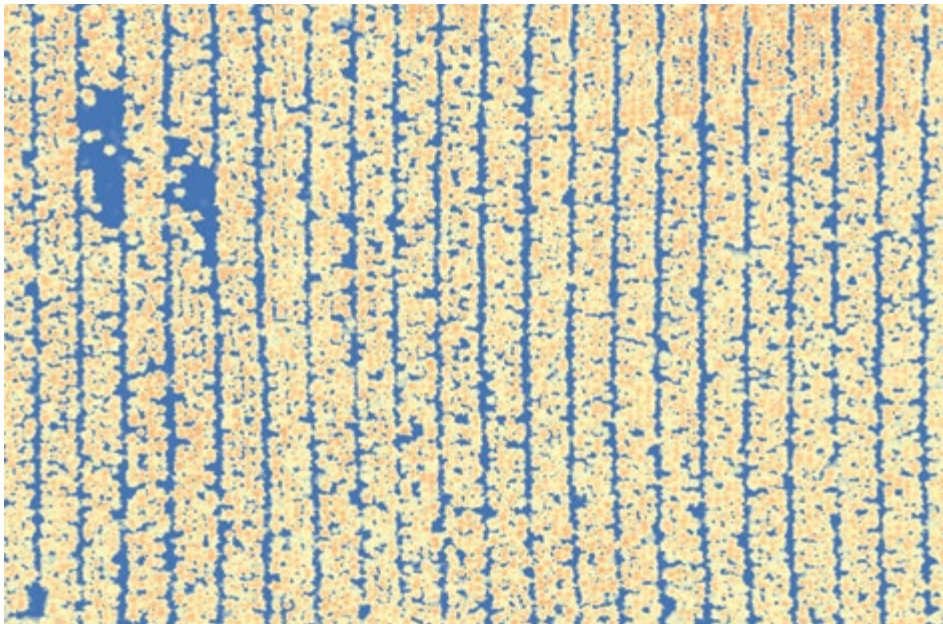
2020 Public Holidays and study periods



VISUALISING COMPLEX SOFTWARE

Rebecca Morgan, *PhD Candidate*

Class structures, hierarchies and dependencies for implementing software are depicted in this striking image. Rebecca Morgan's image demonstrates that these visualisations can be used to better understand the complex structures underlying software architecture.



PINE TREES FROM ABOVE

Dr Stefan Peters, *Lecturer*

Dr Stefan Peter's image stems from a collaboration between the University of South Australia, State Government and the forestry industry. An airborne laser imaging detection and ranging (LiDAR) scanner, captured a point cloud image (a set of data points in space) of a forestry plantation close to Mount Gambier. The image was processed using a normalised color-coded canopy height model – blue represents the ground and red represents the maximum tree height and enables better calculation of timber yields.

2020 Public Holidays and study periods

2020 Public Holidays

National

New Year's Day	1 Jan
Australia Day	26 Jan
Australia Day Holiday	27 Jan [^]
Good Friday	10 Apr
Easter Monday	13 Apr
ANZAC Day	25 Apr
Christmas Day	25 Dec
Boxing Day	26 Dec

South Australia

Adelaide Cup Day	9 Mar
Labour Day	5 Oct
Easter Saturday	11 Apr
Queen's Birthday	8 Jun
Christmas Eve*	24 Dec
Boxing/Proclamation Day	26 Dec
Boxing/Proclamation Day Holiday [†]	28 Dec
New Year's Eve*	31 Dec

2020 UniSA Study Periods

Study period one

13 January to 27 March

Study period two

2 March to 4 July

Study period three

6 April to 19 June

Study period four

29 June to 11 September

Study period five

27 July to 28 November

Study period six

21 September to 4 December

Study period seven

2 November to 6 February 2021

[^]Australia Day, 26th January, falls on a Sunday in 2020, therefore the public holiday is observed on the following Monday.

[†]Boxing/Proclamation Day, 26th December, falls on a Saturday in 2020, therefore the public holiday is observed on the following Monday.

*In South Australia, a part-day public holiday from 7pm to 12 midnight.





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