

A message from the NIFS Director



Despite the ongoing levels of lockdown and restrictions across Australia and New Zealand, the team at ANZPAA NIFS along with the broader forensic science community has continued to deliver some great collaborative work to advance forensic science in our region.

I am excited to announce that the ANZPAA NIFS team kicked off two new projects this financial year, with the assistance of an additional team member, Karina Muharam. One of these projects aims to develop a framework to map capability across Australia and New Zealand to identify emerging risks in certain disciplines and recommend cross-jurisdictional initiatives to strengthen future resilience.

While we have had to pivot almost entirely to meeting in the virtual environment, our network of advisory and project groups has maintained momentum, with the recent knowledge transfer workshops for the drug analysis workflow mapping project providing a great example. Through the strong foundational relationships and trust that has been built within our groups, the sharing of information and offers of assistance have been able to continue. This progress in such challenging and unprecedented times is testament to the passion and commitment of the 388 practitioners that participate in and help to drive the work programs of our 31 ANZPAA NIFS Groups.

The Workflow Mapping Drug Analysis project, which progressed throughout 2019 and 2020, engaged Australia New Zealand forensic science providers to review their drug analysis processes to identify opportunities for process improvements, cost savings and reduced turn-around times.

Following delivery of the project in February 2021, ANZPAA NIFS conducted two knowledge transfer workshops in July and August 2021. The virtual workshops were attended by approximately 30 drug laboratory staff from 12 agencies. Participants utilised their collective knowledge and experience to challenge the status quo and consider how they could enhance operational practices and service delivery through leveraging Information Management Systems, legislation, communication, and resourcing.

Workshop attendees will now digest the information and consider how they may be able to implement the learnings within their jurisdictions. Follow-up workshops will also be available through ANZPAA NIFS as the jurisdictions progress through these changes.

In addition to jurisdictional capacity building, the workshops also highlighted opportunities for cross-jurisdictional collaboration and capability development. The themes identified will form the basis for discussions about the future forensic drug analysis picture in Australia and Zealand which is scheduled for November 2021.

“The ANZPAA NIFS knowledge transfer workshops provided a productive forum for the Drug SAG to discuss and debate the outcomes from the Workflow Mapping Analysis Project. These

discussions gave each SAG member the opportunity to reflect on their own current operational practices, consider the potential for improvements based on other jurisdictions' workflows, and to share strategies to address mutual challenges. The workshop was invaluable and was just the beginning of the continuing conversation regarding the future of forensic drug analysis in Australia and New Zealand."

Lecinda Collins-Brown, ChemCentre.

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The Forensic Exhibit.

News from the forensic community

In this issue of *The Forensic Exhibit* we share two prominent Engender Change Advocate's thoughts on the importance of diversity and inclusion, and how they are helping to transform culture through their leadership.



▲ SAPOL Forensic Services Branch, DNA Management Unit taking the Engender Change Statement

ANZFEC member Detective Superintendent Damian Powell, South Australia Police (SAPOL) Forensic Services Branch:

"Over the past 12 months, the South Australia Police Forensic Services Branch has been undertaking a review of its structure and capabilities to ensure it is well positioned to maintain and deliver excellence in police forensic services into the future. Creating a more diverse and inclusive workplace is essential in acknowledging that our people are our strength.

The ANZPAA NIFS 'Engender Change' Diversity and Inclusion Leadership program complements SAPOL's 2021-2025 Diversity & Inclusion Strategy to deliver a diverse and inclusive organisation where all people are safe, respected and supported to reach their potential.

With a focus on changing culture in the forensic community by promoting and being accountable for our everyday actions and language, the Engender Change Program has contributed to improving gender equality and fostering improved inclusiveness within our branch. Currently our senior leadership team is represented by a 50/50 gender balance. I believe embracing gender equality at all levels, and in particular senior leadership roles, makes us more productive, innovative and adaptable to change."

In July and August, two new groups from SAPOL, along with members from VPFSD and a member from VIFM took the 'Everyday Commitment' Statement, ANZPAA NIFS welcomes these new Engender Change Advocates.



ENGENDER CHANGE

Transforming Culture Through Leadership



Soren Blau is the Manager of Identification Services and Senior Forensic Anthropologist at the Victorian Institute of Forensic Medicine (VIFM). Soren has

participated in the recovery and analysis of human remains from archaeological and forensic contexts in numerous countries, has delivered training to forensic practitioners and related stakeholders in Australia and overseas, and has extensively published. Soren is an Adjunct Professor in the Department of Forensic Medicine at Monash University, and Founding Fellow Faculty of

Science, The Royal College of Pathologists of Australasia (RCPA). Soren is also currently the Chair of the Forensic Anthropology Technical Advisory Group for ANZPAA NIFS, and a Deputy Chair of the INTERPOL Disaster Victim Identification Pathology and Anthropology Sub-Working Group.

Soren has been the recipient of several awards and fellowships, including the Churchill Fellowship (2013), an Australian Academy of Forensic Sciences Research Fellowship (2014) and, most recently, the Member of the Order of Australia 2021. Australian women have broken a record in 2021 with the highest percentage (44% or

416) of female Order of Australia recipients in an honours list since the introduction of the Australian Honours System in 1975.

"While engendering change requires a culture of tolerance and respect, creating this culture relies on all of us taking individual responsibility, regardless of our professional achievements or positional standing, for how we interact with colleagues. In our daily communications we don't have to always agree, but to engender change we need to be purposeful in having awareness of the impact our actions and comments have on others." – Soren Blau

ANZPAA NIFS are thrilled to announce that we will be meeting with Soren Blau in the coming months to discuss Soren's significant contribution to the scientific community and receiving the Member of the Order of Australia 2021 award. We look forward to sharing the full interview to our Engender Change advocates soon. Learn more about the Engender Change program at <https://www.anzpaa.org.au/forensic-science/engender-change>

The Forensic Exhibit.

News from the forensic community

Research and Innovation Roadmap

The purpose of the ANZPAA NIFS Research and Innovation Roadmap 2020-2025 is to promote the investment of funding and resources in research that is operationally relevant and of vital importance to forensic science service provision in Australia and New Zealand. ANZPAA NIFS developed the

Roadmap through extensive engagement with the forensic community. It defines research areas that are important to strengthening current forensic science processes and building future capability. The figure below summarises the Roadmap research areas aligned to the ANZPAA Strategic Priorities.

Promoting Research in Forensic Science

ANZPAA Strategic Priority		Research Area	
Address Risk	→	Forensic Fundamentals	Strengthening underpinning science
		Human Factors	Improving objectivity & practice
Enhancing Practice	→	Data Sets	Developing activity level reporting
		New Tools	Automating processes & creating new capabilities
Shaping Stronger Connections	→	Forensic Intelligence	Using forensic data for broader purposes

You can find more information on the Roadmap via the following link: <https://www.anzpaa.org.au/forensic-science/our-work/projects/research-and-innovation-project>.

Under the Roadmap 2017-20, ANZPAA NIFS provided funding support for 11 research projects. In each edition of *The Forensic Exhibit* we provide the forensic science community with an update on selected projects. We thank the lead researchers for sharing their project update in the following ANZPAA NIFS Project Support section.

ANZPAA NIFS Project Support

A unifying approach for evaluating transfer and persistence trace evidence

*Associate Professor Jurian Hoogewerff
Director, National Centre for Forensic Studies*

Since the time of Locard, and especially in the last 50 years, interest in providing the necessary 'toolkit' to aid the recovery and interpretation of transferred trace materials has increased significantly. Yet for the most part, these studies have remained heavily siloed within specific disciplines and/or trace evidence types (e.g. fibres, glass and soil). The very focused nature of these studies may have led to researchers being unaware of common processes and fundamental factors.

In this ANZPAA NIFS sponsored project at the University of Canberra (UC) PhD

student Michael Aberle went back to basics to develop a general, discipline independent framework. In the last twelve months, Michael undertook a systematic literature review across the forensic trace evidence disciplines and dived into relevant aspects of material science. Especially 'tribology', the science of friction, wear and lubrication related to interacting surfaces in relative motion, describes many of the core principles needed to understand fundamental aspects of transfer and persistence.

In many discussions with the rest of the Canberra team; Prof James Robertson (UC), Dr Brenda Woods (AFP), Prof Hilton Kobus (UC) and myself, Michael wrote a thought-provoking report that outlines a possible universal approach to evaluate transfer and persistence evidence irrespective of material type. The report also mentions matters to consider when designing and performing case reconstruction studies, e.g. what

parameters might be relevant for some materials but not for others.

While researching, discussing and writing this report, the whole research team became very appreciative of the challenging nature of properly qualifying and quantifying transfer, persistence, prevalence and recovery. The good news is that the new fundamental insights provide a solid base and a huge potential for exciting experimental research which should lead to new valuable insights. Such spin-off studies have already been started at UC. A condensed version of the report findings has just been published in the *Journal of Forensic Sciences*: <https://onlinelibrary.wiley.com/doi/abs/10.1111/1556-4029.14833>.

The Forensic Exhibit.

News from the forensic community

ANZPAA NIFS Project Support (continued)

Elemental glass database and statistical modelling with likelihood ratios in forensic investigations

Hayley Brown

Manager Chemistry, Forensic Science SA

This project commenced mid-2019, with Forensic Science SA staff providing specialist knowledge to support the research being undertaken by University of Adelaide Mathematical Sciences Masters student Oliver Lountain. Over the past 2 years, Oliver has been working hard assessing statistical methods for comparison of forensic glass samples using chemical composition data generated through LA-ICPMS analysis.

Oliver has been able to conduct these assessments by first delivering a glass elemental database from various samples analysed at Forensic Science SA. He has then been able to use machine learning methods, decision trees in particular, to predict matches and non-matches of glass. These predictions can be quantified by constructing score-based likelihood ratios.

Oliver has commenced writing his thesis, and is in the final stages of the practical assessment of data and likelihood ratios. Despite experiencing delays due to COVID-19, he aims to have the project completed by the end of November 2021. Look out for an update on his final report in 2022!

Investigating deep learning for handwriting examination authorship opinions

Carolyne Bird PhD

Science Leader – Document Examination, Forensic Science SA

In 2020, a University of Adelaide's School of Mathematics honours project investigating deep learning for handwriting examinations was undertaken. Funding support was received from ANZPAA NIFS, with Forensic Science SA providing specialist advice and handwriting samples to student Ephraim Rogers. A primary aim was to develop deep learning approaches for an automated identification system for natural and disguised handwriting.

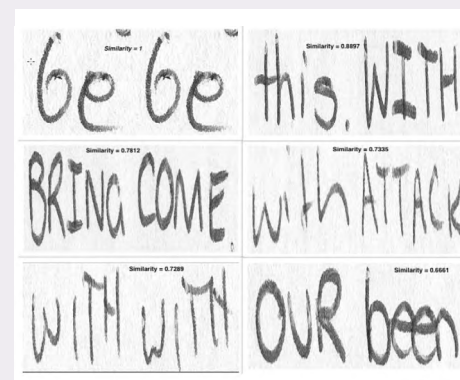
The proof-of-concept study focussed on developing a classification algorithm to differentiate between natural and disguised handwritten words. The methods included:

- developing a convolutional neural network for writer classification;
- developing a Siamese neural network to classify matched word pairs; and
- using a distance measure to analyse whether a matched pair is natural, disguised or are dissimilar.

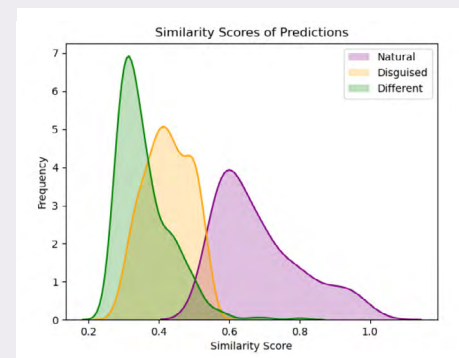
The developed convolutional neural network achieved a correct writer classification rate of 77% when training on nine writers with natural and disguised handwriting. This model was improved by creating a Siamese neural network, by running two convolutional networks in parallel, which achieved a correct writer classification rate of 96.9%.

While this work shows that it is possible to use neural networks to correctly categorise same/different writers for

natural and disguised written words, there is much more work required before such system for assessment of handwriting can be introduced in a forensic context. For example, the image process steps used in this project cannot be used for writing on lined paper, and correct segmentation of words cannot occur if words are written too closely together, in addition, the developed model cannot generalise to writers outside the training set, and samples need to be labelled natural or disguised for training.



▲ True samples with high similarity scores imply the Siamese pairs are natural writings from the same person



▲ Smoothed histogram of similarity scores for natural, disguised and different handwriting. Each histogram has pronounced bimodality with natural and different writings being positively skewed, whereas disguised writing appears to be symmetrically distributed.

The Forensic Exhibit.

News from the forensic community

The Pathies

The NSW Health Pathology Awards: *Caring, connecting and pioneering – for all of us* celebrates the extraordinary achievements of our people and our services.

Now in its second year, “The Pathies” shine a light on the 5,000-plus NSW Health Pathology (NSWHP) staff who go to extraordinary lengths to deliver highly specialised pathology and forensic services, which help to protect the health and safety of our communities.

In these uncertain times, it's important to celebrate the essential role our staff have played during the ongoing response to COVID-19, as well as during bushfires, floods and droughts, and continuing to maintain vital health and justice systems.

This year, the innovative work undertaken at NSWHP's Forensic & Analytical Science Service (FASS) has been recognised as finalists in five categories (team and individual):

- Contributing to Better Health and Justice Systems – partners in the NSW Government's Drug Surveillance Strategy
- Creating Safer, Healthier Workplaces – implementation of staff safety and service delivery resources at the Drug Toxicology Unit
- Environmental Sustainability – Facilities Management Team
- Research Excellence – Jeremy Watherston, Senior Forensic Biologist
- RITE Staff Member – Phuong-Loan (Juliet) Nguyen, ICT Performance & Reporting Officer.

Visit <https://www.pathology.health.nsw.gov.au/latest-news/events/nsw-health-pathology-awards/nsw-health-pathology-awards-2021-finalists> to read the stories of our amazing finalists in a commemorative Finalists Awards Booklet.

The winners will be announced in a virtual awards ceremony later this year.

Follow us on NSW Health Pathology's [Facebook](#), [LinkedIn](#) and [Twitter](#) for event details and learn more about our people and services.

let's celebrate our finalists

NSW Health Pathology Awards 2021
Caring, connecting and pioneering - for all of us



The Forensic Exhibit.

News from the forensic community

National Threat Letter Database



AFP Forensics, Document Sciences Team

The National Threat Letter Database (NTLD) is a repository of threatening and anonymous mail maintained by the AFP Forensic Document Sciences team, which is contributed to by Document Examination Teams within Australian jurisdictions and AFP investigations teams nationally.

AFP Forensics has had a threat letter database in existence since 2003. With support of the DocSAG, a national approach was taken in 2012 with the establishment of the NTLD. 2015 was the first full year of operation of the NTLD, with all Australian Document Examination laboratory jurisdictions continuing to submit threatening and anonymous correspondence for addition to and searching against the NTLD. Since then, approximately 40% of NTLD submissions have come from state and territory jurisdictions, which is a great milestone since its elevation to a national database.

The NTLD currently has over 1300 mail items, with over 40% of items linked as being from common sources. Mail items can include envelopes, parcel packages, boxes, printed and handwritten letters, newspaper articles and magazine clippings. Mail items can also contain other suspicious or unidentified contents, such as white powders, miscellaneous solvents, biological fluids or contaminated products.

The NTLD supports both Commonwealth and state investigations, with common offences including the production of

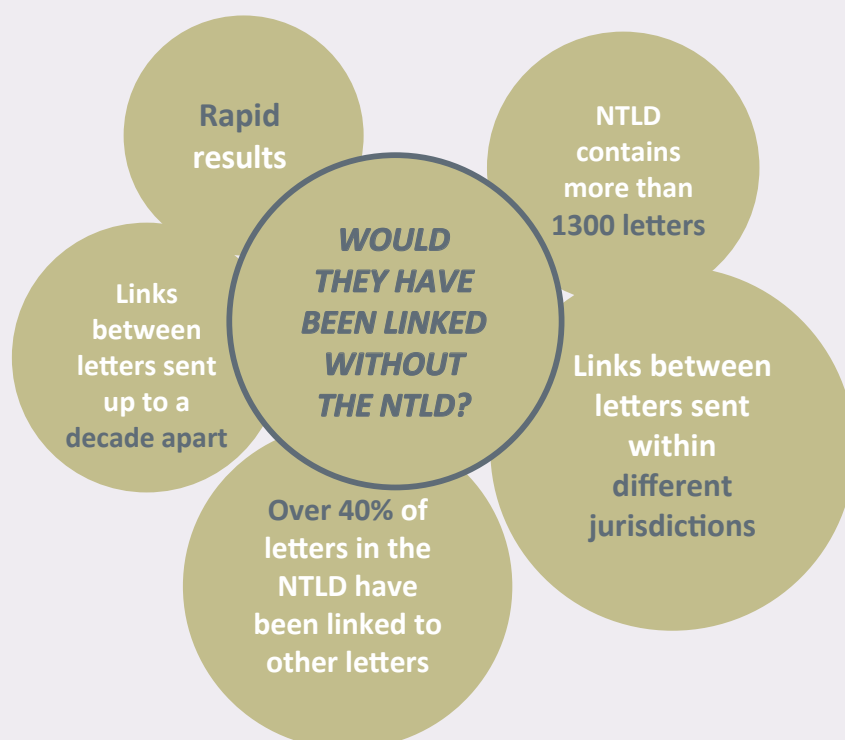
documents and materials encouraging violence, advocating terrorism or threats to harm and kill; sending dangerous articles using a postal service; using a carriage service to menace, harass or offend or for a hoax threat; and domestic violence and stalking offences. The majority of targets are high office holders and notable members of the public.

The benefits of the NTLD include the ability to report potential links between cases for further investigative action; access to cross-jurisdictional resources to investigate serial letter writers resulting in the potential to charge and convict offenders; and the ability to build a

national intelligence picture of the threat environment in this space. In 2020, three cross-jurisdictional links were obtained which were reported for further investigation, and a continual increase in submissions is key to achieving more such links in the future.

All jurisdictions within Australia are encouraged to submit letters for searching and upload, even if the letter will not undergo any form of forensic testing. For more information, contact your local jurisdiction's Document Examination team (if available) or contact AFP Document Sciences directly on

docexamintel@afp.gov.au



The Forensic Exhibit.

News from the forensic community

Operational assessment of Diamond™ Dye

Forensic Science SA

Recovery and DNA profiling of latent touch DNA deposits constitutes a large proportion of the workflow in any operational Forensic DNA laboratory. As touch DNA is not visible to the naked eye, being able to successfully recover these deposits often relies upon the knowledge and experience of the forensic examiner. However, the DNA profiling success rate for touch DNA deposits is often poor meaning that insufficient amounts of touch DNA are being recovered. Methods which enable the visualisation of touch DNA will provide both scientific and financial benefits to operational laboratories by identifying exhibits with the highest chance of success.

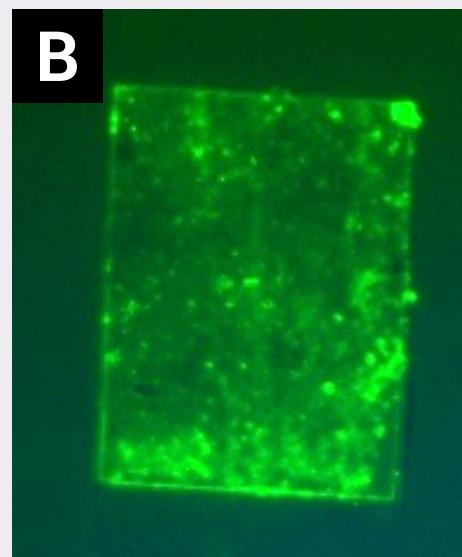
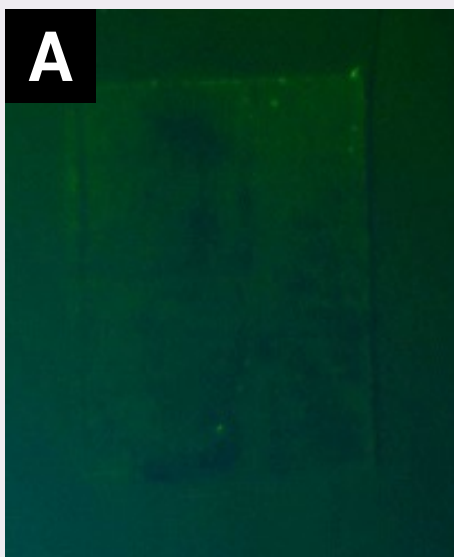
Diamond™ Dye is one of many commercially available fluorescent DNA binding dyes which is mainly used for DNA visualisation after gel electrophoresis. There has been growing interest in Diamond Dye in the forensic community as extensive research conducted by Professor Adrian Linacre (Chair in Forensic DNA Technology, Flinders University) and his research group has shown that, under controlled conditions, it effectively binds to corneocytes thus enabling visualisation of touch DNA deposits. Although this research is extremely promising, it was unclear if it would translate to operational casework, where a diverse range of substrates is encountered and the amount and distribution of touch DNA is uncontrolled.

Forensic Science SA recently conducted an extensive evaluation of Diamond Dye which has just been published in *Forensic Science International: Genetics* (<https://doi.org/10.1016/j.fsigen.2021.102579>). Diamond Dye was shown to effectively locate areas of touch DNA on some exhibits when visualised using the

Polilight. However, issues with background and non-specific fluorescence, as well as absorbance of the excitation light by black surfaces demonstrated that Diamond Dye is not compatible with all exhibits. The ability to use Diamond Dye to screen for the presence of cells on swabs and tapelifts used to sample exhibits was also investigated. Background fluorescence of the swab matrix prevented Diamond Dye being used to screen swabs but recovered cells could be visualised on tapelifts. The study culminated in a live casework trial consisting of 49 plastic bag and tape exhibits. This trial showed limited application of Diamond Dye to triage out negative items as DNA was still recovered from items with no detectable fluorescence. Where fluorescence was detected, its distribution was patchy and diffuse which prevented targeted sampling. A correlation was unable to be made between the amount of fluorescence observed and DNA yield or profiling

outcome. Interference with Diamond Dye staining was also noted for exhibits which had undergone prior cyanoacrylate/Ardrox fingerprint treatment.

Although it appears that Diamond Dye is not suited as a generalised screening technique across all touch DNA casework exhibits, further investigation is warranted to determine its applicability to specific exhibit types and tapelifts.



▲ Tapelifts used to sample latent touch DNA deposits from the inner collar of a worn cotton T-Shirt: A) without Diamond Dye treatment B) with Diamond Dye treatment. Tapelifts were observed under Polilight at 490nm with a 555 nm interference filter.

The Forensic Exhibit.

News from the forensic community

Artificial intelligence in sperm detection

NSW Health Pathology Forensic & Analytical Science Service (FASS)

In order to provide timely information to NSW police, an automated scanning microscope (Zeiss-MetaSystems Axio Imager Z2 scanning microscope) was incorporated into the Biology Evidence Recovery Unit over a decade ago, to scan slides submitted in Sexual Assault Investigation Kits for the presence of spermatozoa. The automated microscope uses image analysis software provided by MetaSystems to select sperm candidates for review by the biologist. This automation was highly effective and reduced a biologist's time previously spent manually scanning slides using a standard microscope, from approximately an hour to 15 minutes.

The automated system was recently upgraded and the opportunity was identified to adopt better imaging hardware and innovative artificial intelligence (AI) capability to enhance the image scanning and sorting function. The upgrades increased the system's scanning speed and enhanced the capability to appropriately rank the candidates. This significantly eases the confirmation process of 'true' sperm by a biologist reviewing sperm 'candidates' in the selection gallery.

As FASS were the first laboratory to implement AI technology in sperm detection, there was no established

roadmap. FASS biologist, Danielle Lau, worked collaboratively with the software developers MetaSystems, to provide a large range of training material to develop Deep Neural Networks for effective image sorting. The project was followed by testing, optimising, validating and implementation of the system. Danielle was awarded the Hargraves Innovator Award for her contribution to implementing the new AI capability into evidence recovery.

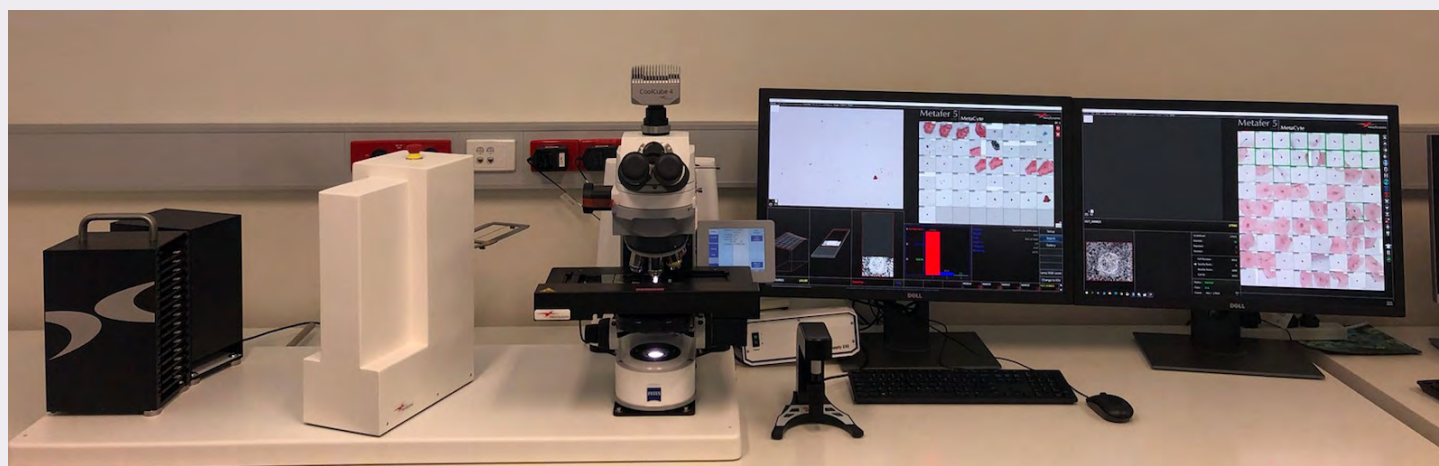
The new AI application has revolutionised the automated sperm detection process with an additional halving of the 'hands-on' time for a biologist, elimination of the

queue of slides waiting for automated scan, along with improved accuracy and ease of use.

Beyond the benefits to the biologists, this innovation has improved the service to NSW Police investigators, with notification of results relating to the presence of sperm typically occurring within 48 hours from receipt, for standard priority Sexual Assault Investigation Kits.



▲ Danielle Lau, Forensic Biologist; Evidence Recovery Unit, Forensic & Analytical Science Service



The Forensic Exhibit.

News from the forensic community

A new Augmented Reality (AR) app is set to change the way investigators process violent crime scenes

Institute of Environmental Science and Research Limited (ESR)

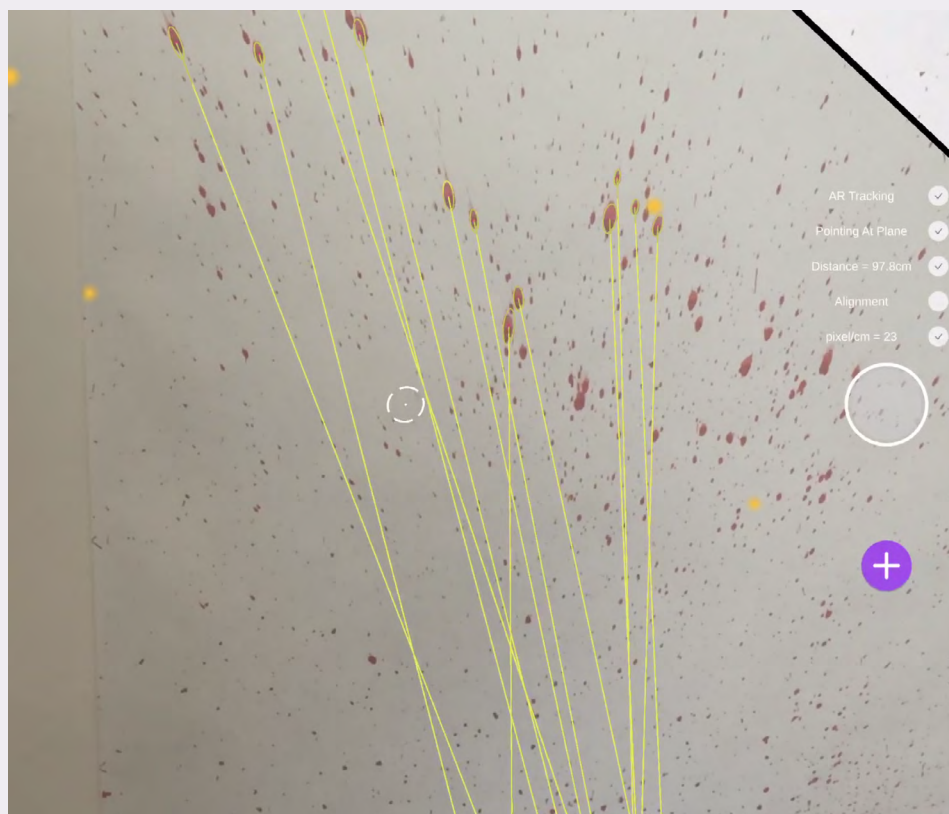
ESR scientists, in collaboration with tech company Evan Taylors Digital, have developed a new app that uses AR technology to analyse bloodstain patterns. Impact spatter stains and cast-off patterns are typically left at a crime scene when a bloodied surface is struck or when blood comes off a moving object, such as a weapon.

Currently crime scene investigators can use stringing methods to reconstruct droplet trajectories at the crime scene. While the process creates an effective picture of any blood spatter event, in practice, the method is time consuming and lacks precision. Some scene investigators use more advanced 3D

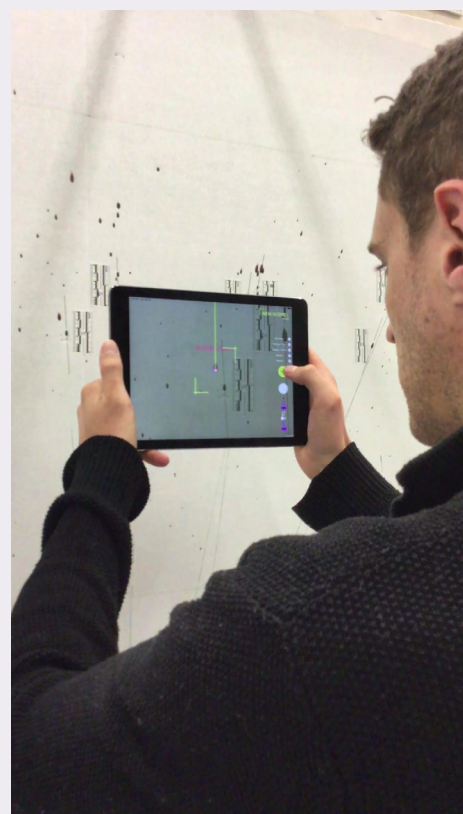
laser scanning devices to capture images and data of the crime scene and use bloodstains pattern analysis (BPA) software to analyse impact patterns afterwards. However, this technology incurs high equipment cost and is not undertaken in real-time.

The Droplet Trajectory Imaging (DTI) app automatically generates a set of bloodstain measurements from selected bloodstains, which are used to calculate and visualise the droplet flight paths at the scene. Multiple flight paths can be used to estimate the area of origin, which allows scene investigators to visualise virtual pattern analysis applied into the crime scene in real-time. This in-field bloodstain pattern analysis helps investigators have a more efficient decision-making process supporting crime scene reconstruction and guiding the selection of samples for DNA analysis.

A validation study is planned to confirm the accuracy of the real-time augmented reality projection of the area of origin analysis generated by the app. The resulting publication from this work will support crime scene use by forensic staff.



▲ Virtual trajectories are presented as an augmented reality visualisation displaying the area of origin in real-time



▲ Bloodstains within a pattern are selected in the app. Stains are automatically measured and individual trajectories lines calculated.

The Forensic Exhibit.

News from the forensic community

Rolling out state of the art MPS technology

NSW Health Pathology Forensic & Analytical Science Service (FASS)

NSW Health Pathology provide a state wide genomics service using state of the art diagnostics including Massively Parallel Sequencing (MPS) technology. In contrast, the application of MPS technology to forensic investigations is more recent.

FASS, keen to implement new technology to enhance service provision, procured the Thermo Fisher Scientific Ion Chef and Ion GeneStudio S5 sequencer. In 2021, FASS began operational use of MPS for phenotyping and biogeographic ancestry analysis.

Previously, NSW Police outsourced this testing to a University Laboratory, while FASS progressed to implement MPS. FASS carried out a concordance study to verify the established method, prior to transferring the analysis to FASS. NSW Police are currently supporting a training program for FASS biologists to carry out the associated interpretation and reporting. To date, phenotyping and ancestry

analysis has been carried out at FASS on selected unsolved homicides and unknown remains. This technology provides additional information which may assist in the investigation of missing person cases and is one of the many tools applied in NSW in a focused effort to find resolution for families.

Currently, MPS technology for whole mitochondrial genome DNA testing is completing validation for person reference samples, to be operational this year. Optimisation and validation for challenging compromised samples, including human remains, will follow.

By expanding the current FASS mitochondrial DNA testing to include the whole mitochondrial genome, the power to identify true biological links will be strengthened and will assist in the resolution of missing persons. Whole mitochondrial genome DNA testing will also be available for unsolved crime cases with samples such as hairs, which are often unsuitable for nuclear DNA testing. The MPS validation, led by Dr Catherine Hitchcock, is an interesting journey,

given the technology was new to FASS scientists, along with considerations relating to embedded health information within the data, necessitating a Privacy Impact Assessment. The validation has worked through a variety of challenging instrument and reagent issues in addition to grappling with the vast quantities of sequencing data to be analysed throughout the validation.

FASS continues to participate in National MPS Working Groups, collaborating to support the implementation and accreditation of forensic applications of MPS.



▲ (left to right) Felicity Poulsen, Scientist, and Catherine Hitchcock, Senior Scientist; Research, Development & Innovation, Forensic & Analytical Science Service.

The Forensic Exhibit.

News from the forensic community

Soil forensic provenancing in the press

Geoscience Australia

On 5 July 2021 Dr Patrice de Caritat, Principal Research Scientist at Geoscience Australia, presented a Keynote Lecture at the Goldschmidt 2021 Conference entitled “*Geochemical mapping applications to forensics and intelligence*”.

The presentation, co-authored by Brenda Woods and Paul Roffey of the Australian Federal Police (AFP), Jurian Hoogewerff of the National Centre for Forensic Studies (NCFS, University of Canberra), and Jennifer Young of Flinders University, was selected as one of only eight talks among over 1000 presentations by the conference press centre for a media release. The Goldschmidt press release was widely disseminated, including by Science Magazine, Eos, Forensic Magazine, National Geographic (Spain), Radio Canada, and other media outlets in Australia, Europe, the USA, and Asia.

The Keynote Lecture retraced the first author’s journey from being a resource and environmental geochemist, through developing and implementing geochemical surveys at various scales (including for the whole of Australia), to his recent forays into soil geochemistry applied to forensic provenancing. This research was developed with co-workers during a secondment to the AFP and an ongoing association with NCFS, where Patrice is also Adjunct Professor.

The main innovations of the work are threefold. Firstly, the approach uses existing geochemical databases, which are available worldwide at a range of scales. Secondly, compositional data are treated in a statistically correct way. Thirdly, use of existing digital soil maps has not been put forward in forensic applications before. Some of this work was published in Journal of Forensic Sciences in 2019 and 2021, with another paper currently under review.

The Flinders-Adelaide-AFP-UC-GA team is currently extending the provenancing capability to include mineralogy and biome data to soil and soil-derived dust under a Defence Innovation Partnership (South Australia)-funded research and development project entitled “*InFoDust: The Intelligence and Forensic potential of dust traces for counter-terrorism and national security*”.



▲ View of the suburban land development of Taylor in Northern Canberra, looking SE from The Centenary Trail (dated Dec 2018).

©2018 Michael Aberle, University of Canberra

The Forensic Exhibit.

News from the forensic community

ANZFSS Brisbane 2022

Donna McGregor

Lecturer in Forensic Science at Griffith University/QPS; and Chair, Organising Committee ANFSS 2022

ANZFSS 2022 is fast approaching! Now we are in September, the beautiful spring weather has arrived in Brisbane and it reminds us how much we are looking forward to hosting the 25th International Symposium of the Australian and New Zealand Forensic Science Society at the Brisbane Convention and Exhibition Centre in just over 12 months (11- 15 September 2022).

Planning for the event is tracking well, with plenary speakers and discipline chairs locked in. We are looking forward to hosting Prof Shari Forbes, Mr Troy O'Malley and Dr Angela Williamson, who are just some of our invited speakers for ANZFSS 2022. The venues for the social events are being considered by the organising committee and trying to pick them is challenging with so many options. The official website is getting upgraded, so please keep checking (www.anzfss2022.com) for updates and speaker profiles. The call for abstracts will go out at the end of this month, so please consider what you would like to present at ANZFSS 2022. An email blast will go out to the membership when the submission portal opens.



For all updates please see our official webpage at

www.anzfss2022.com

For all enquires please contact the organising committee at

anzfss2022@encanta.com.au

IAFS 2023 – A Pathway towards a Memorable Meeting!

Distinguished Professor Claude Roux

President, International Association of Forensic Sciences, University of Technology Sydney

Key Dates

- **Call for Abstracts Open:**
Wednesday 12 October 2022
- **Call for Abstracts Deadline:**
Wednesday 8 February 2023
- **Super Early Bird Registration Open:**
Monday 14 November 2022
- **Super Early Bird Registration Deadline:**
Tuesday 13 December 2022
- **Early Bird Registration Deadline:**
Wednesday 21 June 2023
- **Author Registration Deadline:**
Wednesday 21 June 2023
- **Meeting Dates:**
20 – 24 November 2023

For any queries, please contact the IAFS 2023 Meeting Managers via iafs2023@arinex.com.au or visit www.iafs2023.com.au



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Welcome

Karina Muharam

We are pleased to introduce the newest member of the ANZPAA NIFS team – Karina Muharam.

Karina has joined ANZPAA NIFS as a Senior Forensic Project Officer on a fixed-term contract.

Karina has a strong background as a forensic reporting biologist, working at Queensland Health and Victoria Police. She also worked for a central equipment supplier validating laboratory instrumentation. Karina will assist the ANZPAA NIFS team with our Forensic Fundamentals and Standardised Consumables Pricing Arrangements projects and support other aspects of our work program.

Karina's Standardised Consumables Pricing Arrangements project will explore the feasibility of leveraging bulk purchase power to save our forensic science agencies on high volume analytical consumables costs.

The Forensic Exhibit.

Events Calendar

2021

OCTOBER

1st RISEN Workshop – New trends in Crime Scene Investigations

8 October 2021

Virtual event

► <https://www.risen-h2020.eu/>

New South Wales Police Force Crime Scene Services Branch Inaugural Expert Conference

27 October 2021

Sydney, Australia

NOVEMBER

NSW Fingerprint Experts Conference

10 - 11 November 2021

Sydney, Australia

Forensic and Clinical Toxicology Association (FACTA) 2021

14 – 17 November 2021

Brisbane, Australia

► <http://facta2021.com.au/>

2022

JANUARY

58th Annual The International Association of Forensic Toxicologists (TIAFT) Meeting

30 January – 3 February 2022

Cape Town, South Africa

► <https://tiaft2021.co.za/>

MAY

9th European Academy of Forensic Science Conference (EAFS)

30 May – 3 June 2022

Stockholm, Sweden

► <https://www.eafs2022.eu/>

AUGUST

29th Congress of the International Society for Forensic Genetics (ISFG)

29 August – 2 September 2022

Washington, DC

► <http://www.isfg2021.org>

SEPTEMBER

25th International Symposium of the Australian and New Zealand Forensic Science Society (ANZFSS)

11 – 15 September 2022

Brisbane, Australia

► <http://www.anzfss2022.com/>

2023

NOVEMBER

23rd Triennial Meeting of the International Association of Forensic Sciences (IAFS) in conjunction with the 26th Symposium of the Australian and New Zealand Forensic Science Society (ANZFSS)

20 – 24 November 2023

Sydney, Australia

► <https://iafs2023.com.au/>

#IAFS2023

The Forensic Exhibit.

More information

Acknowledgement of Country



ANZPAA NIFS acknowledges Aboriginal and Torres Strait Islanders are Australia's first peoples and the

traditional owners and custodians of the land on which we work. ANZPAA NIFS is committed to fulfilling the principles of New Zealand's founding document The Treaty of Waitangi (Te Tiriti o Waitangi). Central to the principles is a common understanding that all parties will relate and participate with each other in good faith with mutual respect, co-operation and trust.

The Forensic Exhibit is committed to fulfilling the intent of international treaties and human rights legislation applicable to the various jurisdictions in which we operate, our obligations to Aboriginal and Torres Strait Islander peoples, and the principles of the New Zealand (Aotearoa) Treaty of Waitangi (Te Tiriti o Waitangi).

Newsletter contributions

If you would like any further information on ANZPAA NIFS or would like to contribute to the next edition of *The Forensic Exhibit* please contact ANZPAA NIFS Secretariat: secretariat.nifs@anzpaa.org.au

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