

Identification Network Welcomes Fingerprint Researchers: Academia and Industry Workshop

Putting our fingerprint on the future of identification research and practice



The University of Leicester's *Identification Network* was launched in 2017 and brings together world class research in diverse aspects of identification. The Network seeks to interact with external researchers and practitioners to explore new technologies and approaches to the identification of individuals. The *Academia & Industry* fingerprint workshop, held at College Court on July 5, brought together researchers, police forces and forensic providers from across the UK to discuss the future of research in this field and its practical implementation.

The Identification Network

The identification network brings together experts in molecular, mathematical, biomedical, imaging, anthropological and legal concepts to explore advances in identification of individuals, including living people of unknown identity and origin, historical figures, casualties of conflict or the victims of violent crime or natural disaster. The network is funded by the Leicester Institute for Advanced Studies (LIAS), and is led by Professor Rob Hillman.



Professor R. Hillman, Dr. M. de Puit

"This is a lively and interactive community with a real sense of purpose. The intention is that our Network can develop strong links with both the researchers and practitioners, to the benefit of all parties."

Rob Hillman

Fingerprinting from an interdisciplinary perspective

The Identification Network combines expertise from different fields, including fingerprinting, DNA, toxicology, pathology, archaeology and law. While fingerprints are the primary source of identification of individuals involved in criminal activity, the success rate in converting crime scene marks to evidentially usable images is typically below 10%. This motivates fingerprinting as an important strand of the Network's activity. The work of the Network spans a range of activities, from the design and optimisation of chemical reagents and treatments, through acquisition of visible marks to image analysis and quantitative evaluation, all of which are required in order to provide the judicial system with robust evidence. Communication between researchers in different disciplines, between researchers and practitioners, and between the expert research community and the public are vital in order that research can be informed by social impact and the judicial system can respond effectively to public concerns.



Professor J. Levesley, Dr .P. Panchmatia,

Escalating public and judicial expectations of fingerprinting evidence require the research community to utilise new techniques and to make consultative decisions on research directions. In an environment of diminished funding, greater efficiency of resources is vital in the selection, development and evaluation of the new technologies needed to provide practitioners with unambiguous evidence. The *Industry & Academia* fingerprinting event sought to provide a showcase of cutting edge research in the field and a networking opportunity for those working in different areas to respond to new discoveries with critical comment and practical suggestions regarding their implementation in industry and practice.



Delegates discuss the posters

Fingerprinting: Forensic Science and Crime

Forensic Science involves a strong relationship between fundamental research and its practical implementation in the field; investment and development are crucial to this link. Effective investigation by the police and other agencies and fair and transparent treatment by the legal system demands the highest levels of clarity of evidence. As the primary method for identification in cases ranging from volume crime, such as theft, to more serious crimes involving drugs and violence, there is a constantly shifting need to obtain results from diverse types of evidence. Current interests involve the visualisation of latent (non-visible) fingerprints on plastics (from banknotes to drug and explosive wraps), paper and metal (notably weapons of various types). Alternative strategies have been developed to recover and preserve fingermarks, thereby maximising their evidential value, particularly where DNA recovery is problematic. Chemical analysis and mass spectrometry have been successful in quantifying the composition of bodily fluids and fingerprints and show promise for revealing the age of the deposits.

The changing nature of methodology was also discussed in terms of the assembly of reliable databases to produce more accurate identification and their utilisation through less labour-intensive methods. Together, these meet the growing demands for accurate and increased volumes of information on shorter timescales.

The development of research, use of data and feedback from industry and practitioners all inform decisions about the most effective lines of research to pursue. The workshop generated a lively discussion on future directions of research.



Dr. M. de Puit, Professor R. Hillman

DNA, Genetics and History

The workshop represented a full spectrum, from research in chemistry and physics leading to the acquisition of fingermarks through to their analysis for identification purposes. As another crucial technology in identification, DNA analysis was a complementary theme in the workshop programme. It is particularly valuable when establishing familial links. This aspect of identification can be instrumental in reuniting separated family members or in establishing the unknown heritage of migrants. Historically, it can provide information relating to our social history and background as individuals or our cultural identity.

The synergy between the physical, biological and social sciences is a central characteristic of The Identification Network and selected aspects of these were clearly illustrated in a provocative and forward-looking fashion by the *Academia & Industry* fingerprint workshop.



Professor T. King

List of Presenters (in order of appearance):

Sarah Fieldhouse

Facilitating the dual recovery of DNA and fingerprint evidence

Tshaiya Devi Thandauthapani, Adam J. Reeve, Adam S. Long, Ian J Turner and James S. Sharp

Exposing latent fingerprints on problematic metal surfaces using Time of Flight Secondary Ion Mass Spectroscopy

Christofidis, G., Morissey, J., and Brickett, J.W

The Development of fingerprints on metallic surfaces

Rob Hillman, Jodie Coulston

Understanding Physical Developer

Turi King

Hidden in your fingerprints

Marcel de Puit

Fingerprints: from patterns to patterns

Jim Reynolds

Development of a mass spectrometry based method for in-situ age estimation of biofluids and fingerprints

L. Hunnisett, P. Kelly, P. Panchmatia

Working towards the design of more-effective fingerprint development compounds using computational modelling

Jeremy Levesley

Objective Quality Identification