

**DEREK TREMAIN BSc(Hons) GIS ARPS**  
**FORENSIC SCIENTIST**

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## **Professional Profile**

**Diatomology.** One of my specialist areas of interest and expertise, at Guy's Hospital I performed investigations for the presence of diatoms (micro-organisms present in bodies of water) in several hundred suspected drowning cases. Generally, these cases originated from murders and suspicious deaths, but also included suicides and accidental deaths. This facilitated a very thorough and extensive grounding in the numerous types of diatoms found in various circumstances and conditions, including freshwater (rivers, lakes), brackish water (tidal water – freshwater and seawater as found in estuaries and as far as London Bridge) and seawater samples. During my career, I also became a member of a specialist Diatomology Group - a group of interested scientists - who regularly met to discuss the technical methods and standards used in the detection of diatoms in human organs, in order to advance the methodology and the excellence of the discipline.

**Histology.** At Guy's Hospital Department of Forensic Medicine, I worked on routine and specialised forensic pathology cases. Due to my personal interest in early myocardial infarction, I did extensive research into specialised staining methods for the detection of this condition, and wrote and presented a Paper to the American Academy of Forensic Sciences in New Orleans, in 1992.

**Bone Cleaning and Reconstruction.** During my time at Guy's I worked on many cases of bone cleaning and reconstruction, including many from IRA bombings.

**Research into Seminal Staining.** Whilst at Guy's, I was involved in the recovery of sperm from seminal stains on bodies and clothing, using ultrasound and micropore technology.

**National Injuries Database.** Due to my technical expertise, I was in the main responsible for developing the Forensic Medicine Database - which became the National Injuries Database - from an idea put forward by the late Dr Iain West, Consultant Home Office Forensic Pathologist and Head of Department. This involved extensive programming, along with the design and delivery of a system whereby forensic cases could be accessed and viewed comparison purposes (e.g. modus operandi of serial killers).

**Weapon and Wound Overlay.** I have personally performed photographic superimposition in matching skulls with facial characteristics for the purposes of identity. This has evolved over time into the use of video superimposition using a mixing desk. With the advent of computer technology, I have performed superimposition/overlay on an extensive range of weapons and wounds – to date, in excess of four hundred cases. Due to my involvement with overlay and superimposition work, I undertook specific training in the mechanisms of bruising and patterned marks and injury to skin with Dr Iain Eric West and Dr Nathaniel Cary – both holding concurrent positions as Lead Consultant and Head of Department. This has culminated in an extensive knowledge of intradermal bruising, abrasion, burning to skin, bone imprints and shaped wounds/patterned injuries.

**Forensic Graphic Design (2D & 3D BodyMapping).** From an original remit given by Dr Iain West, I originated the concept of Body Mapping within the United Kingdom. This specialism was devised in order to present injuries in graphical format in order to sanitise images shown to the Jury in murder trials. I have been performing Body Mapping for in excess of ten years, using cutting-edge technology, researching and incorporating the best available software, and keeping abreast of current trends in technology. This has led to the commissioning of bespoke software – used within the Hollywood film industry – to demonstrate internal injury and wound tracking, and is now available in 2D and 3D format.

**Training & Teaching.** During my years working at Guy's Hospital Medical School, I was involved in the teaching and training of scientific students - and additionally Forensic Pathologists from overseas - in forensic histological and microscopy techniques. I oversaw the research of a postgraduate working towards

acquiring her PhD qualification in Forensic Medicine, advising and overseeing her work in the process of research, and completing her Thesis.

In 2001, I became a Consultant with the National Policing Improvement Agency (NPIA - formerly Centrex), and in this capacity I gave many lectures at national Police Training Inputs, both making trainees aware of the work of the National Injuries Database, and disseminating information concerning the Weapon and Wound Overlay techniques I perform which are available to them. I was a Consultant advisor on case analysis, patterned injury to skin and forensic imaging for the National Injuries Database at the National Policing Improvement Agency.

## Academic Qualifications

### Graduate Qualification

1967	City & Guilds 119 - Part I <i>Pass</i>
1972	City & Guilds 119 - Part II Specialising in Histology <i>Distinction</i>
1976	City & Guilds – Part III Special Course <i>Pass: Full Technological Certificate</i>
1998	<b>BSc (Hons) - Bachelor of Science with Honours</b>
1998	<b>GIS - Graduate Imaging Scientist</b> <i>Awarded by the Royal Photographic Society for work on the Forensic Medicine Image Database and my weapon and wound Overlay work.</i>
1998	<b>ARPS - Associate of the Royal Photographic Society</b>

## Forensic Science Career

### Aug 2010 – Present Graduate Imaging Scientist

### Forensic Image Services

### Dec 1999 – Aug 2010 Graduate Imaging Scientist

### Specialist Image Services Limited

Producing 2D and 3D Body Mapping at the request of Judges, Barristers, the CPS, Murder Investigation Teams within the Police Force nationwide, and at request of Forensic Pathologist / Weapon and Wound Overlay and Animation of patterned injuries with overlying weapon (in excess of six hundred cases). I was the originator of this specialism.

### 2008 to Present

### Consultant

### Manlove Forensics/ ArroGen Forensics

Diatom Analysis

### Dec 01 – Sept 07

### Consultant

### NCOF/NPIA

Part-Time

### 1985-1999

### Chief Scientific Officer

### Department of Forensic Medicine

Guy's Medical School

### 1977-1985

### Senior Lab Scientific Officer

### Department of Forensic Medicine

Guy's Hospital Medical School

### 1972 –1977

### Scientific Technician

### Department of Forensic Medicine

*Headhunted* Guy's Hospital Medical School

### 1969-1972

### Technician

### Gordon Museum

Guy's Medical School

### 1969

### Junior Technician

### Gordon Museum

Guy's Medical School

**1964-1969****Student Technician****Gordon Museum**

Guy's Medical School

**Key Achievements and Contributions****Awards and Commendations****PHOTOGRAPHIC PRIZES**

March 1978	2 <sup>nd</sup> Prize – Technical: <i>Highly Commended</i> – Medical: <i>Highly Commended</i> – Natural History - Awarded by Institute of Science & Technology
March 1979	1 <sup>st</sup> Prize – Medical/Technical - 3 <sup>rd</sup> Prize – Medical/Technical - Awarded by Institute of Science & Technology
March 1981	3 <sup>rd</sup> Prize – Technical - Awarded by Institute of Science & Technology
April 1982	1 <sup>st</sup> Prize – Technical (published) - <i>Highly Commended</i> – Technical
August 1984	3 <sup>rd</sup> Prize – Technical - <i>Highly Commended</i> – Technical

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**PUBLICATIONS**

- **Simple Laboratory Techniques for the Identification of Seminal Stains** by Epivatianos, Mant & Tremain in *Medicine Legale Toxicologie*, **1980**, Vol. 23, No.1, pp 393-396.
  - **1<sup>st</sup> Prize Technical Photograph**, published on *front cover* of *Laboratory Equipment Digest*.
  - **Forensic Pathology**, published in *Educational Courses*, **1984**, Vol. 5, No.2, p 16.
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**PRESENTATIONS**

**The Histological Detection of Early Myocardial Ischaemia Using a New Rhodamine Staining Technique on Paraffin-Embedded Tissue**, Tremain & Shepherd, *American Academy of Forensic Sciences' 4<sup>th</sup> Annual Meeting*, New Orleans, February 1992.

**Presentations to Senior Police Investigating Officers** on a regular nationwide basis.