# Journal of Forensic Science and Research

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**Clinical Image** **Published Date:- 2024-12-23**


## Crime Scene Examination of Murder Case


This case study is based on a crime scene examination murder of a young person. This case was reported in the police station located in the north-northeast district of Delhi, India. An unknown dead body was found lying on the roadside with a head injury, suspected to be a road accident. A team of forensic experts was called for a crime scene examination. After examination, it was observed that the body had multiple injuries. There was a blood pattern seen behind the hand and the head of the dead body. This was a suspicion of a murder case, instead road accident. After body identification by the family members and the last location of the victim, the place of murder i.e. house has been identified and examined by the expert team and found a lot of incriminating evidence from the scene of the crime. A two-wheeler was recovered suspected to be used to dump the dead body on the roadside. After examination of the vehicle, clue material found it was found. After a complete examination of the spot and vehicle, sufficient forensic evidence was collected and preserved to establish the crime was murder, not a road accident. This case study involved the application of scientific tools, interpretation of the sequence of evidence at the scene, systematic study of case-related information, and the logical formulation of a theory to give the proper information to the investigating agency. It has been concluded that the boy was murdered in the room and dumped roadside by using the bike.


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**Research Article** **Published Date:- 2024-12-10**


## Development of Latent Fingerprints Using Food Coloring Agents


Aim and objective: The current study aims to explore the effectiveness of food dyes as potential agents for the formation of latent fingerprints on non-porous substrates.
Introduction: The development of fingerprints is a long-established forensic technique crucial for identifying perpetrators. Traditional methods often use various powders to reveal latent fingerprints on different surfaces, but these methods can be costly and pose health risks when exposed to humans. Consequently, there is an increasing demand for alternative techniques that are cost-effective while still providing high-resolution fingerprint visibility.
Materials and methods: In this study, Colormist Super whip food powder red, blue, orange, turquoise, and pink was used for the Development of Latent fingerprints on different non-porous surfaces (CD, Mobile screen, Glass bottle, Mirror, Steel bottle).
Results: The ColorMist Super Whip edible powders proved successful in developing high-quality finger marks with visible level 1 and level 2 fingerprint details across all substrates, showcasing its effectiveness in latent fingerprint enhancement.
Conclusion: Food dyes provide a simple, cost-effective, and eco-friendly method for developing latent fingerprints on nonporous surfaces. Red and black dyes consistently deliver clear ridge detail, while turquoise performs well on glass. Surface type plays a crucial role in dye effectiveness; making food dyes a practical, non-invasive alternative for on-site forensic use.


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**Research Article** **Published Date:- 2024-11-19**


## Human Performance Augmenting Drugs and Technologies

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In many sectors, ranging from sports and military operations to professional settings (notably cognitive enhancement); human performance augmentation has been an enduring ambition. The idea behind this movement, known as human enhancement, has evolved over time from simple means of training to the improvement or augmentation of physical ability through recent developments in fields such as pharmaceuticals and implantable devices that can enhance natural abilities. They span from pharmaceutical agents to wearable technologies used for sophisticated self-experimentation, which offer promise but also present ethical, health, and societal risks Performance-Enhancing Drugs are used to enhance the performance of humans in one way or another as a basic idea. The categories of Performance Enhancing Drugs (PEDs) included are Stimulants: Stimulant drugs, including amphetamines and caffeine (in the form of coffee) have been used for thousands of endeavours and physical stamina for decades. There have been many sources of controversy in the sporting world due to use or misuse and side-effectual restrictions. The release of neurotransmitters such as dopamine and allowing muscles to grow big, and fast. Nevertheless, the consumption of anabolic steroids is strictly controlled because it has side effects and complications such as liver damage, hormonal imbalances, and greater aggression. Erythropoietin EPO is a hormone that produces red blood cells, and increased oxygen delivery to muscle. EPO Athletes and even more notably endurance athletes (such as cyclists) have a storied history of abusing this performance-enhancing agent to build stamina. However, the misuse of this drug can be very hazardous, as it causes complications such as blood clotting and heart issues.

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**Research Article** **Published Date:- 2024-11-13**

Scientific Analysis of Eucharistic Miracles: Importance of a Standardization in Evaluation

Numerous instances of consecrated communion wafers turning into human tissue and blood have been reported throughout history and the contemporary international media, referred to as Eucharistic miracles. Various suggestions have been put forth to explain such phenomena, ranging from miraculous to natural. Here, a novel demonstration is provided showing that the appearance of a bleeding host can occur by placing ordinary, non-consecrated wafers under similar conditions as described for many of these events. Using basic forensic methods, distinctions between ensuant reddish areas and genuine blood were noted. In previous studies with miracle wafers, isolated DNA was resistant to amplification with human-specific primers, which has been attributed to its divine nature. The current study shows that multiple types of non-human DNA existed in unconsecrated wafers, providing an alternative explanation for such findings. Finally, a minimal protocol of scientific examination is outlined to aid in the standardization of such investigations in the future, including a distinctive approach to authenticate the genuine shared origin of such occurrences.

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**Research Article** **Published Date:- 2024-10-31**

Application of Multi-criteria Decision-making Methods for Forensic Analysis of Mechanical Parts in Vehicle Accidents using q-Rung Orthopair Fuzzy Numbers

This study explores the application of a Multi-Criteria Decision-Making (MCDM) approach based on q-rung orthopair fuzzy numbers to identify the origin of mechanical parts found at vehicle accident scenes. The primary objective is to determine the most likely vehicle to which these parts belong by evaluating key criteria such as compatibility, damage level, serial number matching, and color compatibility. Q-rung orthopair fuzzy numbers offer an advanced method to handle the inherent uncertainty and vagueness associated with forensic evaluations, particularly in scenarios where data is incomplete or imprecise. The proposed methodology involves defining the criteria, assigning membership and non-membership degrees using q-rung orthopair fuzzy sets, and applying an aggregation process to effectively rank alternatives. This approach facilitates flexible decision-making by accommodating different levels of confidence and uncertainty, making it particularly suitable for forensic applications where evidence is often ambiguous. The findings demonstrate that integrating q-rung orthopair fuzzy numbers into the MCDM framework significantly enhances the accuracy and reliability of identifying vehicle components involved in accidents. The proposed methodology provides a systematic tool to support forensic investigations, aiding in the determination of liability and contributing to more robust outcomes in mechanical evidence analysis.

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**Research Article** **Published Date:- 2024-10-23**

Male Linear Anthropometrics of Selected Nigerian Ethnicities: A Cross - Sectional Analysis

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Introduction: This study aims at evaluating selected linear anthropometrics of three Nigerian ethnic groups to provide baseline data for the creation of 3D Negroid anatomic models.
Methods: The research design was a cross-sectional design. The sampling technique was multistage proportionate random sampling. The places of study were Imo, Oyo, and Kano States of Nigeria. The study lasted for one (1) year. Random selection of 1500 adult males from three major tribes (500 Igbo, 500 Yoruba, and 500 Hausa between the ages of 18 and 40 years). Tukey's Post Hoc test of multiple comparisons was carried out to determine the specific ethnic groups that differ in specific anthropometric parameters.
Results: The differences in standing height, arm length, and thigh length across the Hausa, Igbo, and Yoruba ethnic groups are statistically significant ($p < 0.05$).
Conclusion: The study concluded that the Igbo and Yoruba groups had higher standing heights compared to the Hausa group. Arm length was longer in the Igbo and Yoruba groups compared to the Hausa group. However, thigh length was greater in the Hausa group compared to both the Igbo and Yoruba groups, while the Hausa group had longer thigh lengths than both the Igbo and Yoruba groups. The Igbo group displayed the largest arm span, whereas the Hausa group had the widest shoulder breadth. However, the Hausa group had a lower bi-iliac breadth in comparison to the other two ethnic groups.

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**Research Article** **Published Date:- 2024-10-22**

Analysis and Comparison of Social Media Applications Using Forensic Software on Mobile Devices

With the integration of mobile systems into daily life, social media applications used especially on Android and iOS platforms contain a significant amount of sensitive information. Social media applications on mobile systems have huge personal and sensitive content. Therefore, it is important to design effective techniques for forensic analysis of social media applications and to detect personal data. In this research, three different paid mobile forensic software and 4 different brands and models of smartphones with different operating systems were used and analyzed. The study shows that private messages, e-mails, time information, shared data, location and time information, and other personal data can be obtained by a forensic expert who performs an examination, and it is seen that one software can access the deleted data, but another software cannot access it. In proportion to the technology used in today's world, mobile forensics incidents are increasing day by day, and a competitive environment is created among the software used to illuminate these incidents. With this competition, software companies dealing with forensic informatics are trying to obtain different data to illuminate forensic events that may occur due to the active use of social media accounts with the developing technology, and software that does not meet the needs in the face of this situation remains in the background. The criminal elements in the investigation areas of mobile forensics differ daily, and the scope of crimes in the virtual environment is expanding with the developing technology. Therefore, mobile forensic analysis applications should be successful in social media applications other than standard data.

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**Review Article** **Published Date:- 2024-09-27**

The Gut-Brain Axis: Exploring the Bidirectional Communication Between the Gut Microbiome and the Brain

The gut microbiome is a complex network of interactions between the brain and the gastrointestinal tract, playing a pivotal role in human health and disease. The microbiota-gut-brain axis (GBA) serves as a crucial connector between the brain's emotional and cognitive centers and the peripheral intestinal functions, emphasizing the profound impact of gut health on overall well-being. The GBA is characterized by a symbiotic relationship between the gut and the brain, regulating the expression of inflammatory cytokines and neurotransmitters. The MGBA is also regulated by microbial metabolites, such as short-chain fatty acids (SCFAs) and fatty acid derivatives. This paper focuses on the importance of the GBA in regulating gut health and the potential for targeted therapeutic interventions to improve health outcomes. The implications of this research are vast, suggesting that future strategies aimed at modulating the gut biome may offer promising avenues for the development of personalized medicine and dietary interventions.

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**Review Article** **Published Date:- 2024-09-19**

A Comparative Analysis of Traditional Latent Fingerprint Visualization Methods and Innovative Silica Gel G Powder Approach

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Latent fingerprints are a common source of information for forensic experts and law enforcement agencies. The thin layer chromatography (TLC) plates that are prepared in this work are made with silica gel G powder. Latent fingerprint remnants are made up of secretions from the nose, palm, and sebaceous, apocrine, and eccrine glands (sweat). However, the quest for more versatile and effective techniques persisted, leading to the emergence of innovative approaches like Silica Gel G powder. The silicon atoms are linked to –OH groups at the silica gel's surface. A latent fingerprint is an imprint left by direct contact with a surface or object that is not apparent to the unaided eye. The advantages of using Silica Gel G powder for latent fingerprint visualization underscore its significance as an innovative technique in forensic science. The latent fingerprints were developed on each of the several substrates using Merck Specialties Private Limited's white-coloured silica gel G powder. There are several techniques in the literature for creating latent fingerprints. The emergence of Silica Gel G powder in forensic science represents a significant breakthrough in the visualization of latent fingerprints. The process of using Silica Gel G powder for latent fingerprint visualization exemplifies the precision and attention to detail required in forensic investigations.

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**Review Article** **Published Date:- 2024-09-10**

Dental Age Estimation using the Cameriere Method in Different Countries: A Review

Age estimation is an essential aspect of profile building in forensic investigations. Age estimation using teeth is one of the exciting applications of Forensic Odontology because teeth can survive post-mortem damage, so it is considered more suitable for age estimation. This study aims to estimate the age of individuals using the Cameriere method on teeth in various countries. The approach used in this research is a literature review study design compiled based on the Preferred Reporting System for Systematic Reviews and Meta-Analyses (PRISMA) guidelines from several articles with a period from 2007-2024. Scientific articles that meet the criteria will be analyzed using the Cameriere method to estimate the age of individuals. The search yielded 222 studies and only 12 scientific articles that met the requirements from the specified articles obtained. The population represents countries from various countries. The sample was in the age range of 4 years - 16 years. The results showed that the Cameriere method can be used to estimate the age of individuals quite accurately in various countries. However, there were some differences in accuracy between countries when using this method.

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**Research Article** **Published Date:- 2024-08-12**

Investigation of Stain Patterns from Diverse Blood Samples on Various Surfaces

Bloodstain Pattern Analysis (BPA) is a crucial forensic technique in crime scene investigation, employing the interpretation of blood spatter patterns to reconstruct event sequences and determine spatial relationships between victims and surfaces. This study explores BPA's application in forensic science, emphasizing its role in establishing links between crimes and culprits, as posited by Edmond Locard's exchange principle. The research examines how bloodstain shape, size, and distribution reveal critical information about impact angles, areas of convergence, and points of origin, while also providing insights into blood flow direction, force applied, suspect positioning, and weapons used. The investigation delves into various bloodstain types, including void patterns, spikes, and satellite stains, and their formation on different surfaces. To enhance understanding of blood behaviour from various sources, the study compares blood samples from three species: human (Homo sapiens), obtained from a professional doctor from discarded piles with precaution from a government hospital in Laxmangarh, Rajasthan and goat (Capra aegagrus hircus), and chicken (Gallus gallus domesticus), obtained from butcher shops in Laxmangarh, Rajasthan. The experimental setup involves dropping blood from a height of 50 centimetre's and measuring the resulting stain dimensions. This comprehensive approach to BPA research aims to refine crime scene analysis techniques, ultimately contributing to more accurate event reconstructions and enhanced forensic investigations. The study underscores the importance of BPA in modern forensic science while acknowledging the need for its integration with other investigative methods to ensure robust and reliable crime scene interpretations.

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**Review Article** **Published Date:- 2024-07-04**

Review on Forensic Analysis of Microbiota in Human

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Numerous studies relate differences in microbial communities to humans. The microbiome is fundamental for the human turn of events, invulnerability, and nourishment. The ordinary microbiota has explicit capability in supplement digestion, xenobiotic and drug digestion, upkeep of underlying trustworthiness of the stomach mucosal boundary, immunomodulation, and assurance against microorganisms. Out of nowhere, it assumes a significant part in criminology. In a few criminal examinations, such perceptible changes in the microbiome and mycobiome can decide the reason or the genuine spot of death. The microbial follows found at the crime location can likewise give obvious proof of responsibility. The point of this audit was to study the microbiome and its applications in scientific sciences and to decide the primary lines of examination that are emerging, as well as its potential commitments to the scientific ?eld.'

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**Short Review** **Published Date:- 2024-06-18**

Forensic Analysis of WhatsApp: A Review of Techniques, Challenges, and Future Directions

WhatsApp, a widely used instant messaging application, has become a valuable source of digital evidence in forensic investigations. This review article explores the forensic analysis techniques, challenges, and future directions associated with WhatsApp. It covers the extraction and analysis of data from various sources, including mobile devices, cloud backups, and network traffic. The article discusses the challenges faced by forensic examiners, such as encryption, data volatility, and the need for proper validation of tools. It also highlights the importance of keeping up with the latest updates and changes in WhatsApp's features and security measures. The future directions for WhatsApp forensics are explored, focusing on the development of more advanced and efficient analysis techniques, the need for standardization, and the importance of international cooperation in addressing cross-border investigations. This review provides insights for forensic examiners, researchers, and legal professionals involved in cases requiring WhatsApp evidence.

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**Clinical Trial** **Published Date:- 2024-06-14**

What to do from the Emergency Room in Case of Suspected Chemical Submission

Chemical submission is a crime where criminals use substances to impose their will on victims. A 44-year-old woman comes to the Health Center disoriented in the temporal sphere, stating that "she does not remember what happened." Her brother, the companion who brings her to the health center, says that he has found her in a place he does not usually frequent. The patient missed a bag she was carrying and could not locate her mobile phone. The patient and companion suspect that she may have been "drugged" in order to rob them. Given the suspicion that the patient may have been a victim of chemical submission, the Emergency Service is called to inform that the victim is going to be referred. The detection of biological samples of the substances used for submission is of vital importance.

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**Mini Review** **Published Date:- 2024-05-07**

Environmental Factors Affecting the Concentration of DNA in Blood and Saliva Stains: A Review

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DNA evidence has now become an essential part of forensic investigations since it offers vital information for person identification and crime resolution. However, the biological material is affected by some environmental factors which may impact the DNA in biological samples. This may affect the correctness and reliability of forensic DNA analysis. This review is related to the influence of various environmental conditions on the stability and degradation of DNA in biological stains including blood and saliva stains. The common factors that affect DNA are temperature, humidity, exposure to sunlight, and type of substrate. The information is crucial to improve forensic DNA analysis and forensic protocol optimization. The DNA stability and integrity in biological materials, such as blood and saliva stains, are indispensable for forensic DNA analysis. Environmental influences, however, significantly affect DNA concentration and may jeopardize forensic analysis. The present review explores various environmental factors for their effect on DNA stability in blood and saliva stains. While DNA degradation is slowed but not completely prevented by low temperatures, it is accelerated by high temperatures. Risks of contamination arise from the promotion of microbial growth and DNA breakdown by humidity. DNA photodamage brought on by sunlight exposure results in strand breakage and cross-linking. DNA stability is also influenced by the type of substrate used; porous surfaces, such as cloth, are better at keeping fluids than non-porous ones, such as glass. Maintaining the integrity of DNA evidence requires an understanding of these variables. The present studies will help to create sophisticated DNA preservation methods for use in forensic DNA examination. The study emphasizes the requirement of improvement in forensic DNA analysis skills, related to the preservation of DNA pieces of evidence and the possible effect of environmental factors.

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**Research Article** **Published Date:- 2024-03-22**

Why Down-managing Backlog Forensic DNA Case Entries Matters

Forensic laboratories face a backlog of case files, affecting service delivery, causing delays. The backlog points to underfunding, poor planning, and inadequate support, hindering deoxyribonucleic acid (DNA) analysis. Resolving casework backlogs may initially seem like a straightforward and attainable measure to improve the arrest of offenders and promote justice. Longer turnaround times impede investigative leads, emphasising the need for efficient strategies and a comprehensive approach to address and prevent backlogs in forensic laboratories. No study has been published on the forensic DNA backlogs in South Africa. The article explicitly addresses one aspect of a Doctor of Philosophy study and aims to ascertain the impact of backlogs in forensic DNA case entries. The study article's research questions included the following: "What cases are considered as backlog?"; "What is the current backlog in forensic DNA case entries in South Africa?" and "What are the main reasons for the backlog of cases involving forensic DNA?" The prompt processing of DNA evidence is vital not only for safeguarding individuals falsely accused of crimes based on circumstantial evidence but also for aiding prosecutors and providing justice for crime victims.

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