

AMITY INSTITUTE OF FORENSIC SCIENCES

IN ASSOCIATION WITH



DIRECTORATE OF FORENSICS SERVICES, HIMACHAL PRADESH, SHIMLA HILLS, JUNGA, INDIA



FORENSIC SCIENCE LABORATORY (GOVT. OF NCT OF DELHI), ROHINI, DELHI, INDIA

Presents

1st International Conference on

FORENSICS, SECURITY & LAW



ABSTRACT BOOK

Theme:

Advancements in Forensic Sciences, Global Security & Legal Challenges

3rd & 4th April 2024

Time: 10:00 Hrs. – 17:00 Hrs. IST

Venue: F-2 Auditorium, Amity University Campus, Sector-125, Noida (New Delhi/NCR)

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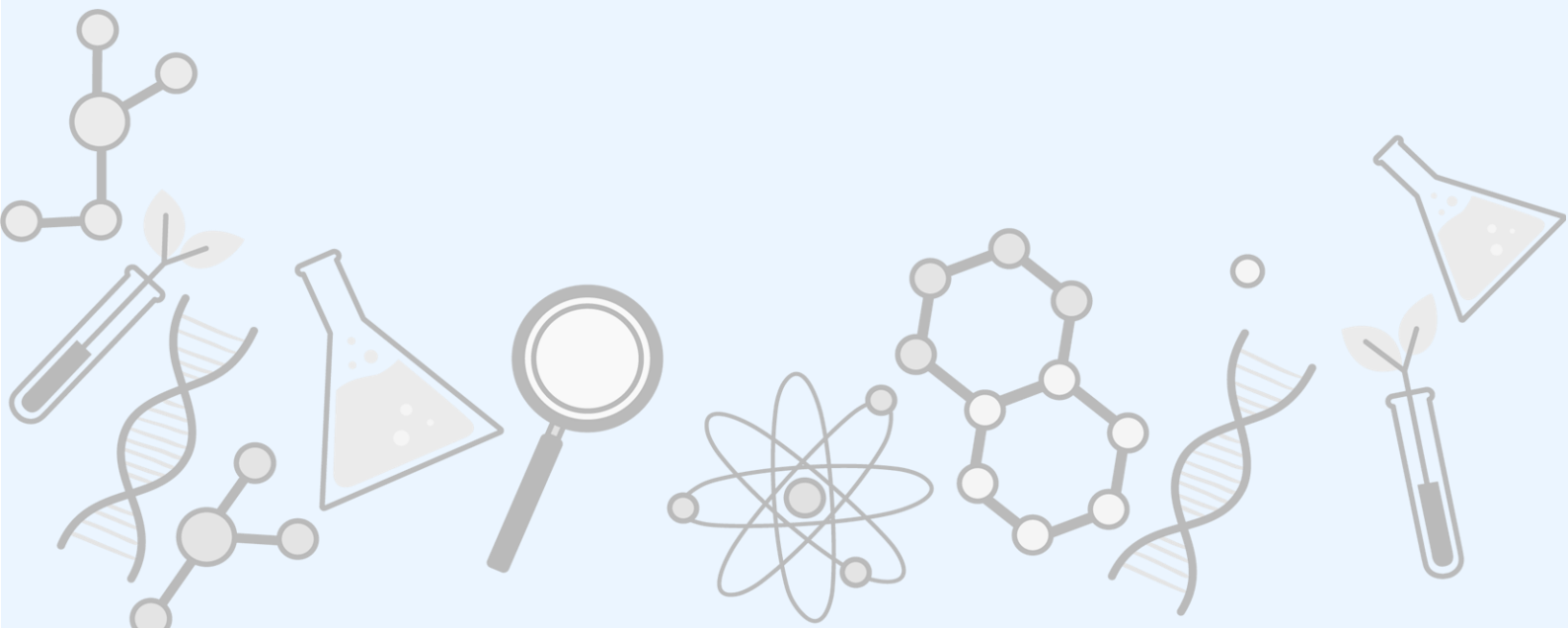
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ABOUT CONFERENCE

The "1st International Conference on Forensics, Security & Law (ICFSL-2024)" is an event poised to explore and discuss the cutting-edge advancements in forensic sciences, global security, and the legal challenges that define our contemporary world. In the 21st century, where science and technology have rapidly transformed every facet of life, this conference recognizes the inseparable interplay between crime, criminology, and a myriad of related disciplines. Our aim is to provide a platform that transcends traditional boundaries, fostering collaboration and understanding among experts, scholars, and practitioners from diverse fields.

In alignment with the evolving landscape of crime prevention, our conference adopts a multidisciplinary approach to address the complex challenges faced by modern society. The overarching theme of our conference, "Advancements in Forensic Sciences, Global Security & Legal Challenges," underscores the critical role played by forensics, security, and law in the pillars of our contemporary criminal justice system. We invite researchers, policymakers, and professionals to join us on this journey as we collectively shape the future of criminal justice, promoting social justice and striving to build a safer, more equitable world.

EVENT OBJECTIVES

Participants would be able

- To comprehend real time cases and assimilate global security, forensic investigation, and discuss pros & cons from legal context.
- To discuss recent advancements in forensic sciences, global security, and law.
- To provide in-depth knowledge in different instruments required for examination of various evidences (physical, chemical, biological, medical, questioned handwritings/ signatures, fraudulent documents/digital signatures and digital & multimedia exhibits, etc.).
- To understand application prospects of forensics sciences, global security & law in real time scenarios.



ABOUT AMITY UNIVERSITY

Amity University is a highly research-focused, innovation-driven and interdisciplinary University with over 35,000 full-time students at its main campus in Noida (Delhi NCR). The focus on quality has led the University to be ranked # 35 among all Indian Universities in NIRF 2023, the # 1 Private University since

the last nine years by India Today and amongst the top 3% Universities globally by QS and Times Higher Education. Amity is also the only University in India to have US regional accreditation by WASC (USA) and by QAA (UK). It is part of the Amity Education Group with over 2,00,000 students across campuses in 16 countries.

ABOUT AMITY INSTITUTE OF FORENSIC SCIENCES

Amity Institute of Forensic Sciences, Amity University Uttar Pradesh, Noida, India is a leading premier institute dedicated to nation service. It offers higher education in forensic sciences at three programmes levels: UG- B.Sc. (Forensic Sciences) (Honours/Research), PG- M.Sc. (Forensic Sciences) & M.Sc. (Cyber Forensic & Cyber Security) and Doctorate- Ph.D. (Forensic Sciences) in Full Time and Part Time. All the courses aim to instil in student's professional acumen, skills and capabilities to deal with different areas of life.

Amity Institute of Forensic Sciences is an institute of Amity University came into existence by an act under the

Amity University (Uttar Pradesh) Act, 2005 and it has also been listed under 'Educational Institutions' in the U.P. Govt. website (<http://www.upgov.nic.in/>). Its main aim is to conduct important professional courses that can ensure employment to passing-out students. In addition, several short-term training and capacity building programmes are being offered by the institute. The institute has organized National and International conferences, workshops, seminars, faculty development programs, refresher courses, value added courses and quiz competitions



AMITY INSTITUTE OF FORENSIC SCIENCES

MESSAGE FROM THE DESK OF CONVENOR



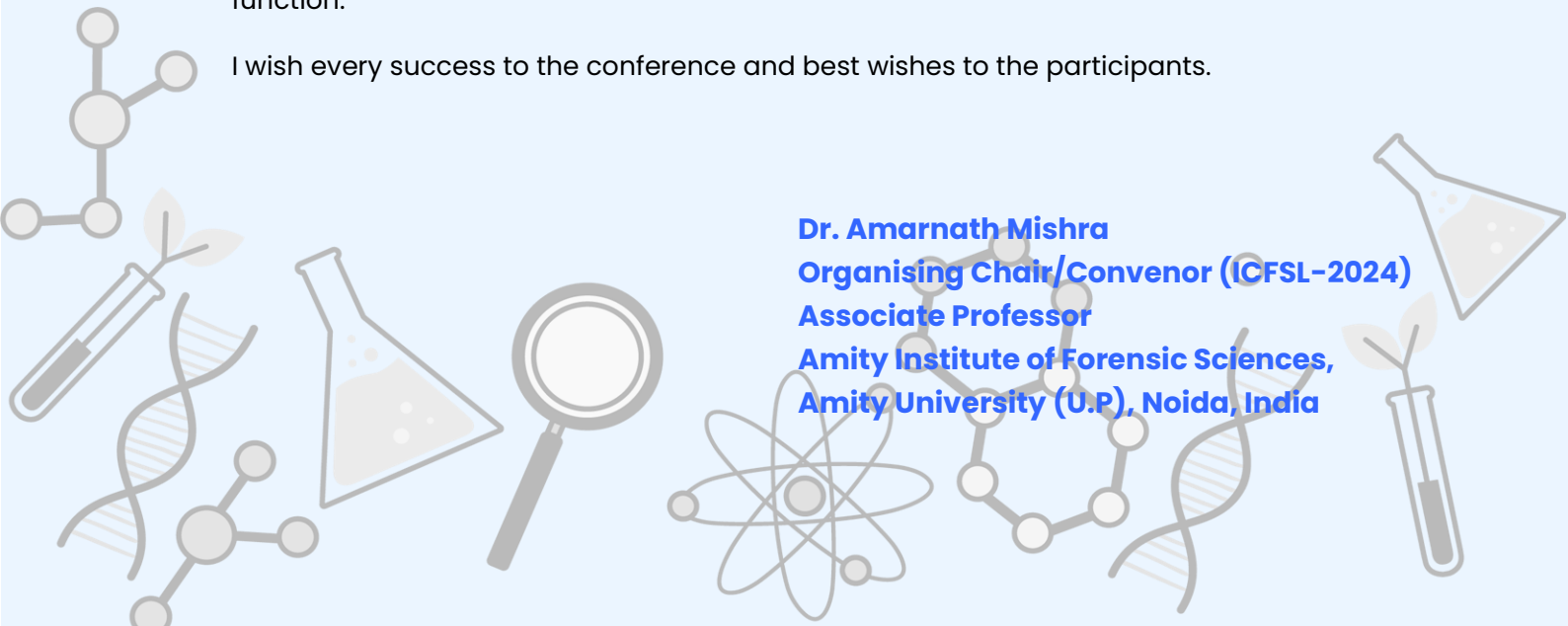
It is a matter of gratification that Amity Institute of Forensic Sciences, Amity University, Noida, Uttar Pradesh in association with Directorate of Forensics Services, Himachal Pradesh, Shimla Hills, Junga and Forensic Science Laboratory (Govt. of NCT of Delhi), Rohini, Delhi is organizing 1st International Conference on Forensics, Security & Law **(Theme: Advancements in Forensics Science, Global Security & Legal Challenges)** on **3rd & 4th April 2024**.

Conferences provide us a platform for sharing of ideas and consensus of rational opinion among all competent experts and researchers. The two days deliberation among the forensic experts, security & legal personnels and researchers may propel them to some, still unexplored future forensic technology and practices.

I am delighted that Hon'ble Vice-Chancellor of Indira Gandhi Delhi Technical University for Women, Delhi, India Dr. (Mrs.) Amita Dev has very kindly consented to be the chief guest in the inaugural function and Dr. Meenakshi Mahajan, Director, Directorate of Forensics Services, Himachal Pradesh, Shimla Hills, Junga, India and Ms. Deepa Verma, Director Forensic Science Laboratory (Govt. of NCT of Delhi), Rohini, India for valedictory function.

I wish every success to the conference and best wishes to the participants.

Dr. Amarnath Mishra
Organising Chair/Convenor (ICFSL-2024)
Associate Professor
Amity Institute of Forensic Sciences,
Amity University (U.P.), Noida, India



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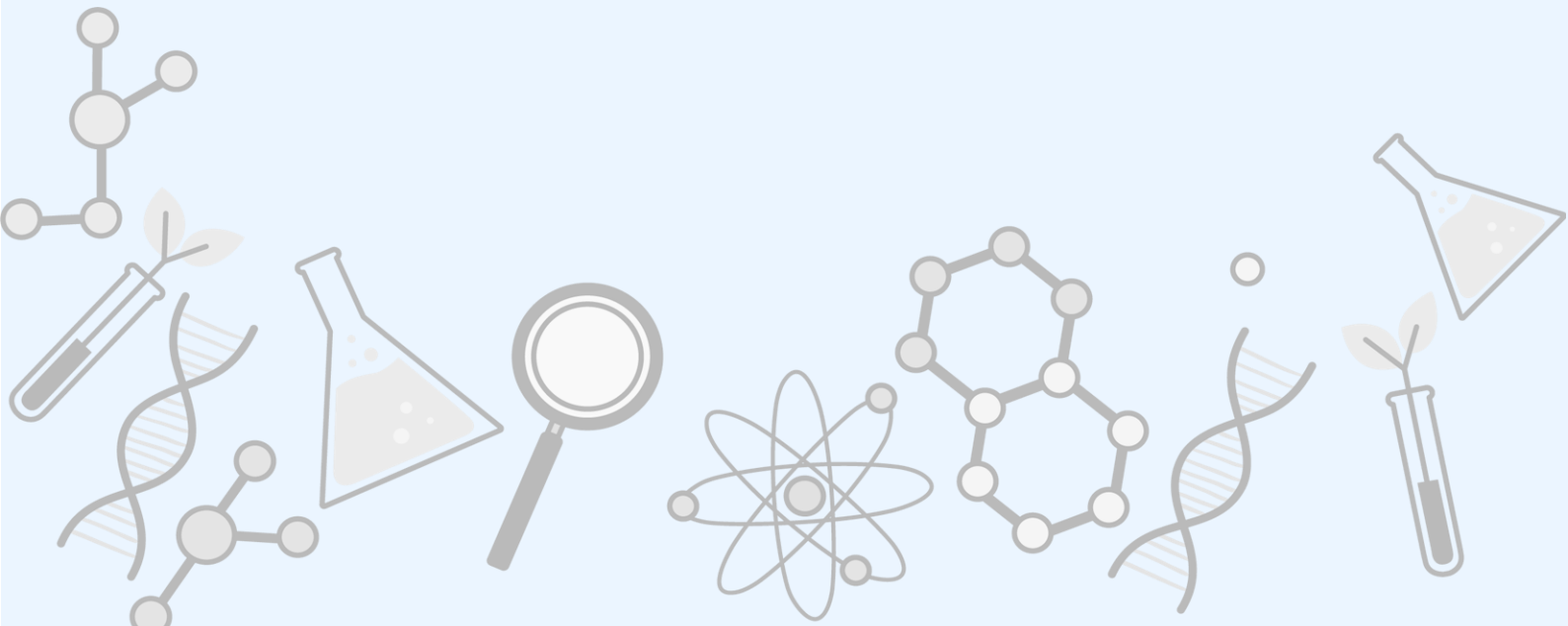
Mr. Ravi Mishra



ORAL PRESENTATIONS

1st **ICFSL** 2024

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QUANTUM COMPUTING AND CLOUD SECURITY: A MULTI-LAYERED ANALYSIS BEYOND TRADITIONAL VULNERABILITIES

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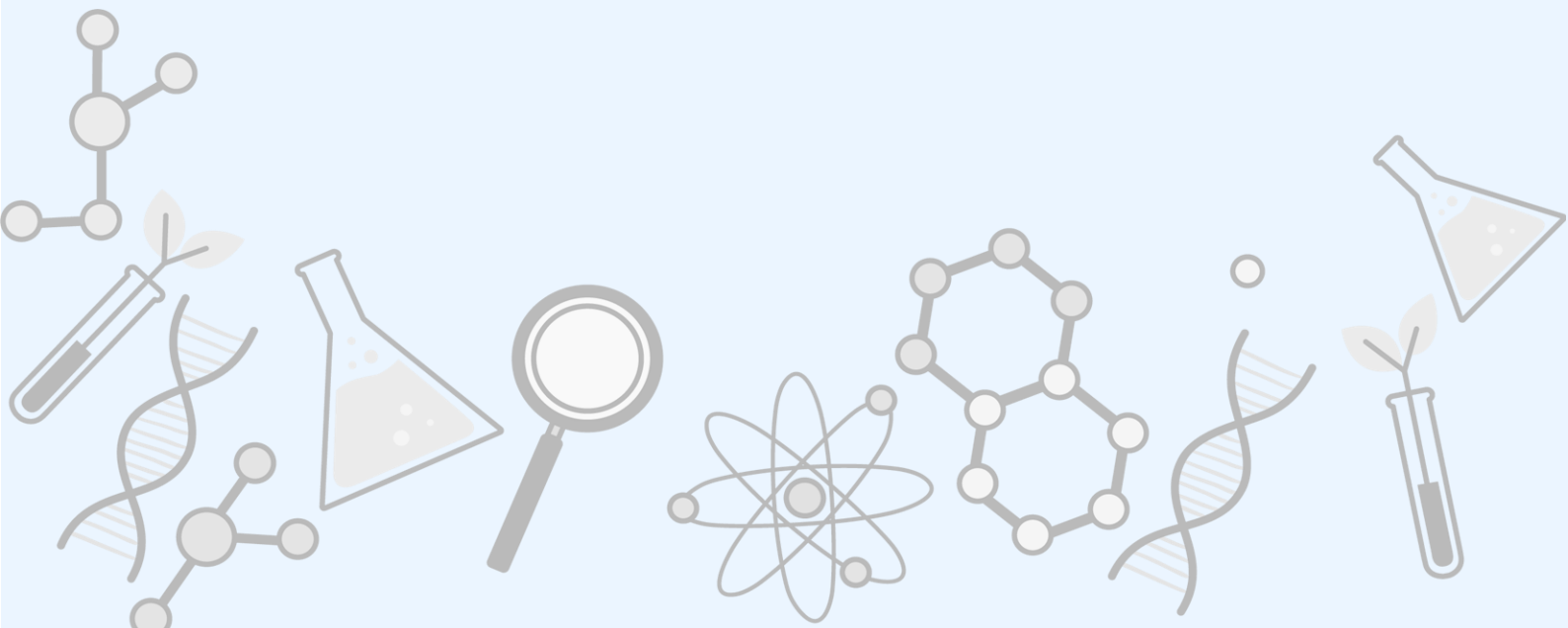
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Abstract:

The advent of quantum computing poses transformative challenges and opportunities for cloud security, rendering traditional cryptographic defences increasingly vulnerable. This paper adopts a mixed-methodology approach, combining quantitative analysis with qualitative insights, to comprehensively examine cloud security in the quantum era. We specifically focus on the vulnerabilities introduced by quantum computing and explore the efficacy of Quantum Key Distribution (QKD) as a pioneering quantum-resilient solution. Our analysis draws on interdisciplinary insights from quantum physics and computer science, and real-world incidents, case studies, and predictive modelling further enrich it. We project that quantum computing will reach a critical capability within the next decade, necessitating the widespread adoption of quantum-resilient practices such as QKD. This paper offers a detailed overview of current and proposed strategies for enhancing cloud security, emphasizing the transformative potential of quantum-safe solutions and outlining a proactive trajectory for future developments. Our concluding remarks advocate for continuous research, cross-industry collaboration, and integrating policy considerations, highlighting the urgent need for a unified approach to safeguard digital assets in the quantum era.

Keywords: Quantum Computing, Cloud Security, Quantum-Resilient Cryptography, Emerging Technologies, Cloud Security Standards, Digital Trust, Quantum Key Distribution (QKD), Predictive Modeling.



PULMONARY, HEPATIC AND RENAL HISTOPATHOLOGY IN AUTOPSY CASES OF PARAQUAT POISONING: OBSERVATIONS OF A 10-YEAR RETROSPECTIVE STUDY

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Abstract:

Background: Paraquat, a widely utilised herbicide, is highly toxic to humans. Paraquat poisoning is a significant health hazard due to its high mortality rate. There is a dearth of research into the pathological changes associated with the toxicity of paraquat in humans. Therefore, we conducted a retrospective cohort study to describe microscopic pathology of lungs, liver and kidney specimens of autopsy cases of paraquat poisoning.

Methods: We included a total of 130 non-survivors of paraquat poisoning admitted in our tertiary care hospital from 1st January 2012 to 1st March 2023. All patients underwent standard medicolegal autopsy, and the viscera samples of their lungs, liver and kidney were sent for microscopic pathological examination. Histopathological reports were accessed to record pathological changes in the organs. Statistical analysis was performed using SPSS software (ver 27).

Results: Histopathological reports of 123, 106 and 111 lung, liver and kidney specimens were analysed, respectively. Among lung specimens, pulmonary congestion was the most prevalent observation (65.8%), followed by intra-alveolar fibrin deposition (60.9%). Among liver specimens, hepatic sinusoidal congestion was highly observed (55.7%), followed by steatosis (48.1%). Among kidney specimens, frequency of observing renal vascular congestion was highest (66.7%), followed by acute tubular necrosis (46.8%).

Conclusion: Fibrin deposition induced by pneumocyte, and capillary endothelium damage was the major pathology contributing to pulmonary toxicity in paraquat poisoning. Hepatic toxicity was likely to be mediated by destruction of endothelial cells and disruption in hepatic blood circulation, causing congested sinusoids. Renal toxicity may be due to proximal tubular damage causing acute tubular necrosis.

Keywords: Paraquat, Poisoning, Histopathology, Lung, Liver, Kidney

PSYCHOPATHOLOGICAL ROLE OF TESTOSTERONE IN VIOLENT CRIMINALS - A REVIEW

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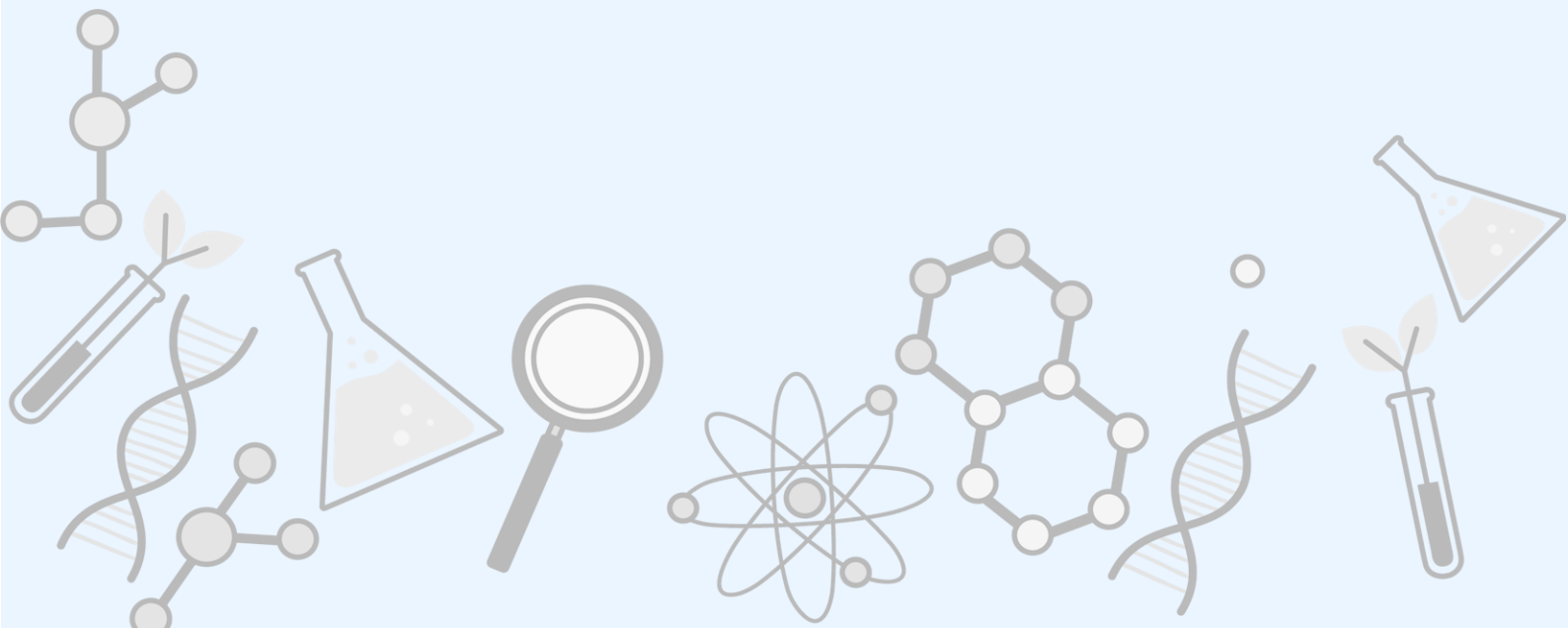
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Abstract:

A by product of the Hypothalamic Pituitary Gonadal (HPG) axis, testosterone is an androgenic steroid hormone, which is known to activate the subcortical areas of the brain to produce aggression. The hypothalamic nucleus, which is implicated in aggressive behavior, contains the majority of the brain's testosterone receptors. Termed as a "violent hormone," recent research suggests a significant association between testosterone levels and violently aggressive behavior among criminals. The term "aggressive behavior" has been used to describe a wide range of behaviors, from the propensity for aggression to outright physical violence. In general it consists of different combinations of three elements: the desire to cause harm to another person, the behavioral expression of this desire, and an associated emotion that might range from irritation to anger. In the brain regions linked to aggression, testosterone is important for both arousing these behavioral expressions and developing the muscle system necessary for their execution. While there is limited research differentiating the impact of testosterone levels between male and female criminals, existing literature indicates that both genders tend to exhibit higher levels of testosterone production among those engaged in violent criminal activities. Testosterone activates certain networks throughout sexual maturity, leading to the realization of aggressive behavior in response to relevant stimuli. This unique feature of testosterone's effects most likely leads to the formation of structures that encourage an increased aggressive reaction to outside stimuli. This study critically evaluates the body of research on the influence of testosterone on the psychopathological characteristics of violent criminals, drawing on a wide range of neurobiological, endocrinological, and criminological works.

Keywords: Testosterone, violent crime, violent hormone, aggression, behavioral expression, psychopathological role, testosterone receptors, criminology.



A COMPREHENSIVE ATR-FTIR SPECTROSCOPIC ANALYSIS FOR THE IDENTIFICATION AND DIFFERENTIATION OF LIP BALMS

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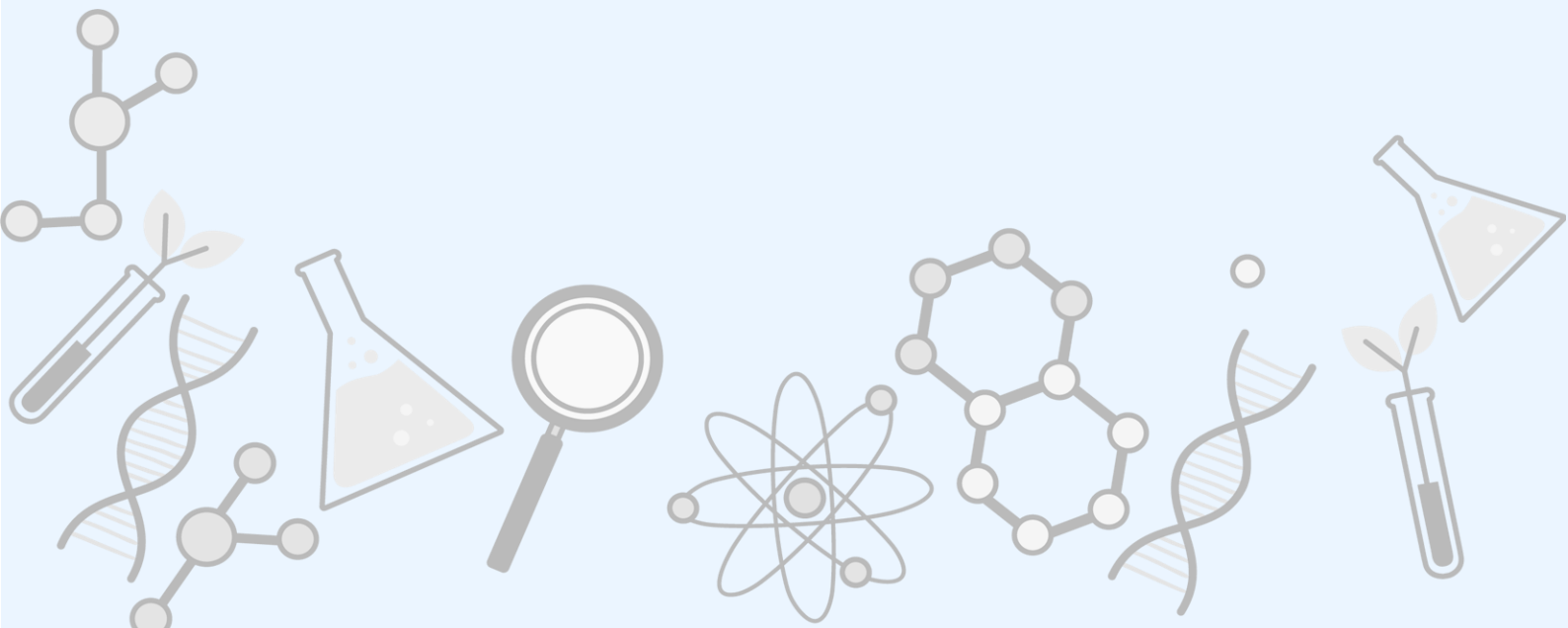
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Abstract:

Lip balm may be encountered as physical evidence in cases involving sexual assaults, homicides, and kidnappings. It can be used as corroborative evidence by providing a potential link between the victim, the accused, and the crime scene. For lip balms to be used as evidence, it is important to understand their diversity and aging process under different conditions. Therefore, in this study, ATR-FTIR spectroscopy in conjunction with chemometric tools such as principal component analysis (PCA) and linear discriminant analysis (LDA) has been used for the objective identification and differentiation of 20 brands of lip balms. Moreover, lip balms on different substrates and wearing effects over time were also investigated. The results show that the PCA-LDA training accuracy was 92.5%, whereas the validation accuracy was 83.33%. A blind study using pristine samples was also performed which resulted in 80% PCA-LDA accuracy. PCA-LDA prediction of samples on various substrates showed a higher chemometric prediction accuracy for nonporous substrates (glass, plastic, and steel), than for porous substrates (cotton cloth, cotton swab stick, dry tissue paper, and white paper) for samples kept in room temperature and under sunlight for 15 days. The substrate study showed that the samples from various substrates could effectively generate respective spectra which can help in brand-level identification even after several days. The present method demonstrates a potential for lip balm samples to be used in forensic casework applications.

Keywords: Lip balm, cosmetics, ATR-FTIR spectroscopy, chemometrics, identification, forensic science.



MULTIPLE DRUG PROFILING IN A CASE OF UNNATURAL DEATH BY APPLICATION OF GREEN CHEMISTRY

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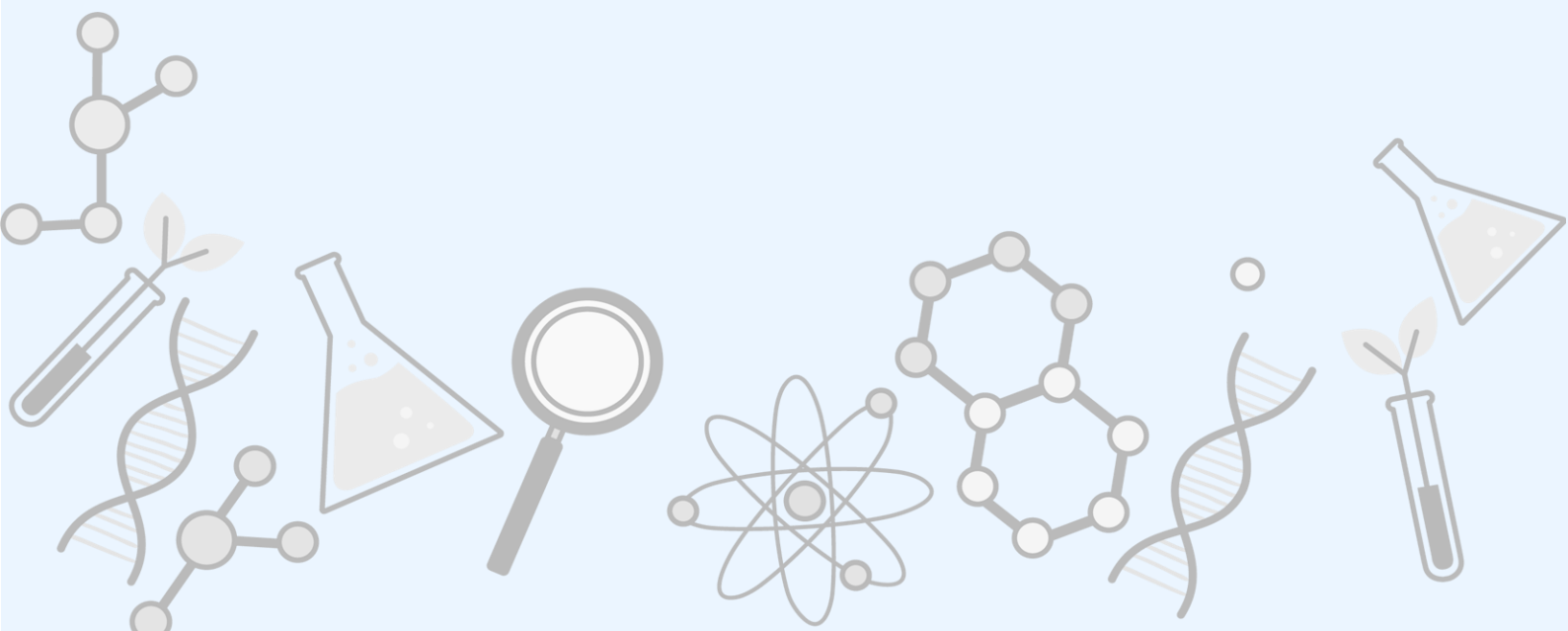
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Abstract:

The prevalence and availability of drugs to the youth has become a menace to the society. The peer pressure or certain other factors like curiosity and romance of the wild the youth are driven to the dark world of drugs. In one such case complaint was lodged about the missing of a youth of about 22yrs for last one day. Subsequently the youth was discovered dead in a jungle area by the side of stream. The body was found in a peculiar kneeling position with no external injury. There were several drugs paraphernalia and strips of certain psychotropic drugs by the side of the dead body. The analysis of the viscera and the blood samples revealed the presence of several narcotic drugs and psychotropic substances. The analytical techniques involved the use of minimal greener solvents and accelerated solvent extraction techniques. The findings at the crime spot and the analytical techniques are discussed in the presentation.

Keywords: Viscera, narcotic drugs, psychotropic substances, accelerated solvent extraction, GC-MS, green chemistry.

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THE SIGNIFICANCE OF CYBER FORENSICS IN UNRAVELING CYBER CRIMINAL ACTIVITIES

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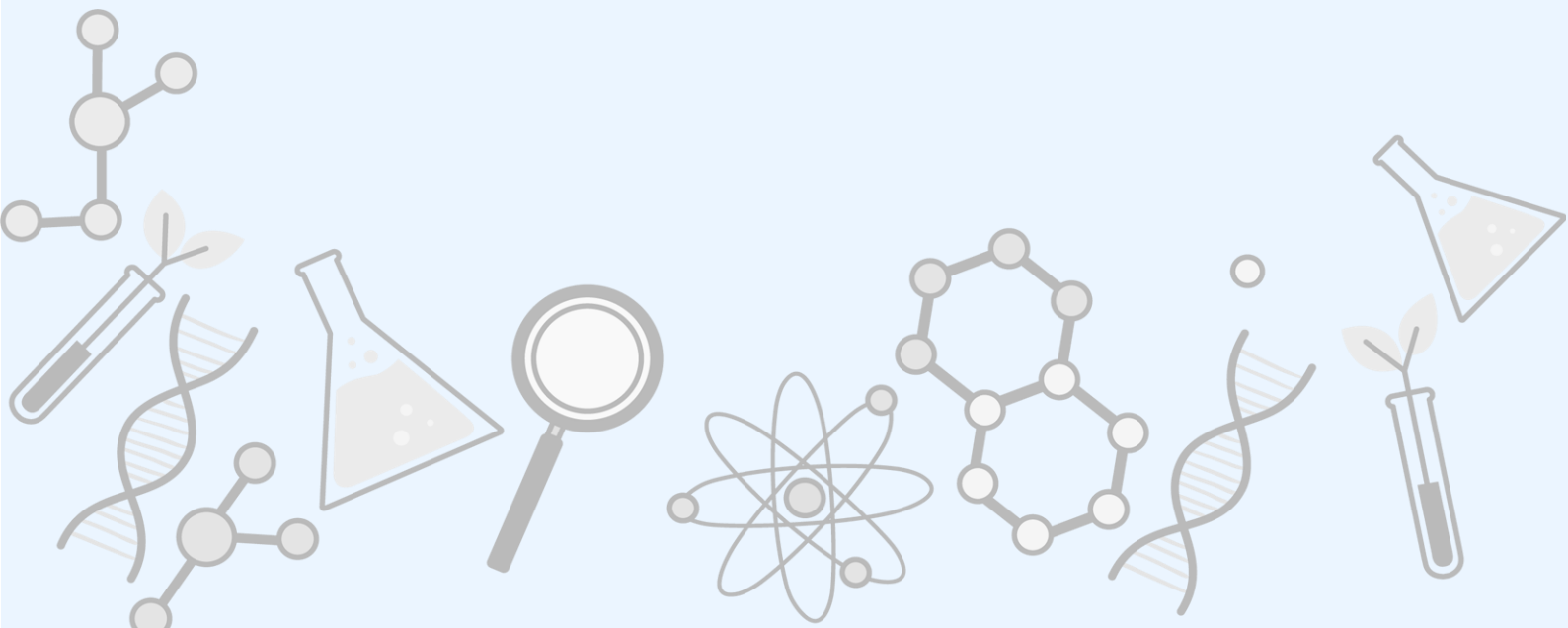
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Abstract:

Ever since the internet and electronic devices came into existence, the ease of doing work has doubled up. The facility of the electronic devices, especially computer and laptops have helped to save a lot of time and energy of human, leading to growth that goes unmatched with respect to the contributions made by him in their absence. Along the same line, if there are pros, then there are cons too. The cons fall under the category, where a crime can be committed electronically with the help of these devices, and to detect the same we need computer forensics. It is this study of electronic evidence, with respect to the ones generated on the computer, when combined with investigation and examination of the same is what is termed as cyber forensics investigation. With the development of internet-based crimes on the computer, a new field that has emerged is, cyber forensics. The investigation mechanism of the cyber forensics is very simple: identification of relevant evidence, collection of the evidence, examination of the evidence and ultimately drawing results out of the same. This research paper focuses on the aspect of the examination of electronic evidence and its credibility in promoting justice in the society.

Keywords: Computer, Cyber forensics, Internet, Investigation.

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FACIAL RECOGNITION TECHNOLOGY: USE BY LAW ENFORCEMENT AGENCIES AND ITS IMPLICATION ON THE PRIVACY RIGHT OF THE ACCUSED

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²Assistant Professor, Department of Law, Kurukshetra University, Kurukshetra

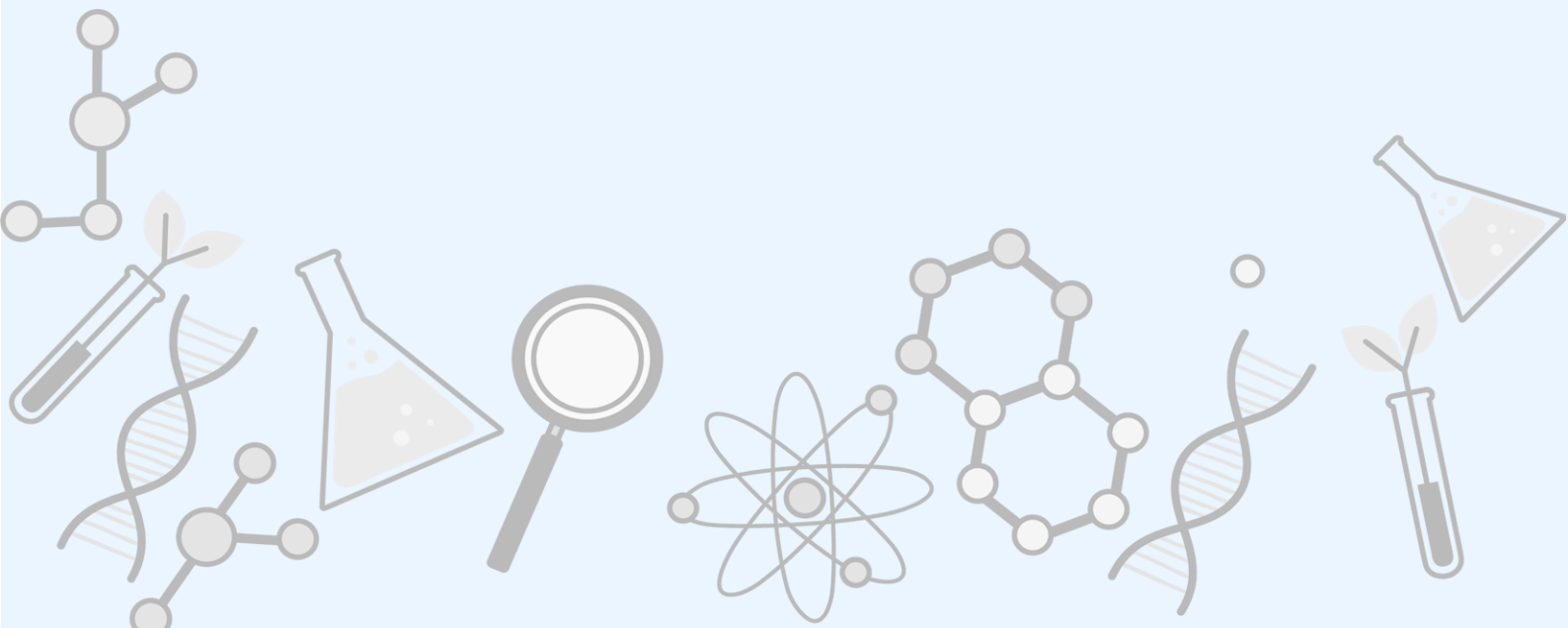
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Abstract:

Technology has become an indispensable tool in the contemporary world. Enormous benefits can be reaped from the constructive use of technology. Also, the unregulated use of technology can have repercussions on the foundational values of our legal system. Facial recognition technology is one such technology that is being used extensively worldwide. There is no doubt that technology has the potential of becoming a potent tool in achieving the goals of effective and good governance and in helping law enforcement officials. But, if used without the backing of a statute and devoid of regulations, it can have severe implications on the valuable rights guaranteed by democratic nations for their citizens. Under our criminal jurisprudence, an accused has certain invaluable and inalienable rights and denial of these rights can negatively affect the trial proceedings. With the advancement in the use of this technology, the likelihood of privacy infringement has increased and this study specifically concerns the impact of the technology on the privacy right of the accused. Banning the deployment of this technology cannot be the solution as it can become a potent tool in crime detection and prevention. The study aims at finding certainly viable solutions by drawing on the experience of certain other jurisdictions.

Keywords: accused, facial recognition, law enforcement, privacy, technology.

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POSTMORTEM REDISTRIBUTION

Moon Jyoti Nath¹, Cheshta Bhati¹, Ashlesha Bhardwaj¹

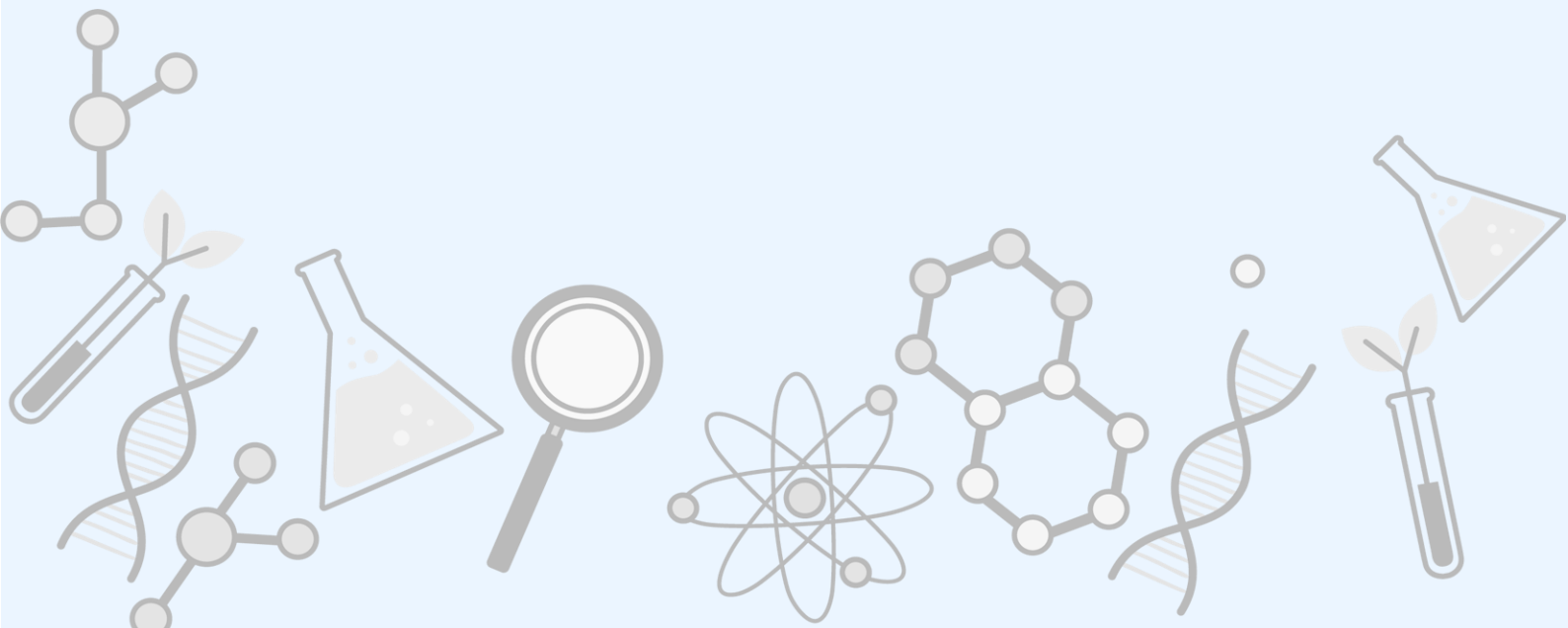
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Abstract:

Postmortem drug analysis plays a crucial role in forensic toxicology, serving as a fundamental tool for determining the cause of death and understanding the pharmacokinetic behavior of drugs after death. However, there are significant risks associated with it because of a phenomenon known as post-mortem redistribution. This phenomenon refers to the postmortem movement of drugs within the body, leading to concentration changes and can mislead forensic investigations, significantly impacting the accuracy of postmortem toxicological interpretations. The purpose of this paper is to provide an overview of the phenomenon, the mechanisms underlying the drug, the several approaches utilized to forecast it, the different postmortem drug concentration artifacts, and the Clinical and Forensic implications that come with this process. Furthermore, we propose the use of redistributable amino acids as new indicators for postmortem forensic examinations and as additional avenues for future forensic study. By reviewing various studies and cases, this paper aims to shed light on the challenges and techniques involved in detecting and interpreting the phenomenon, to improve the accuracy of conclusions drawn from postmortem drug analysis. Through a careful examination of literature and case studies, this paper highlights the challenges and methodologies in detecting and interpreting Postmortem Redistribution, aiming to enhance the reliability of postmortem drug analysis.

Keywords: Postmortem Redistribution, Forensic toxicology, Drug analysis, Amino acid.

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DETECTION OF SIGNATURE FORGERY BY CALLIGRAPHY ARTISTS

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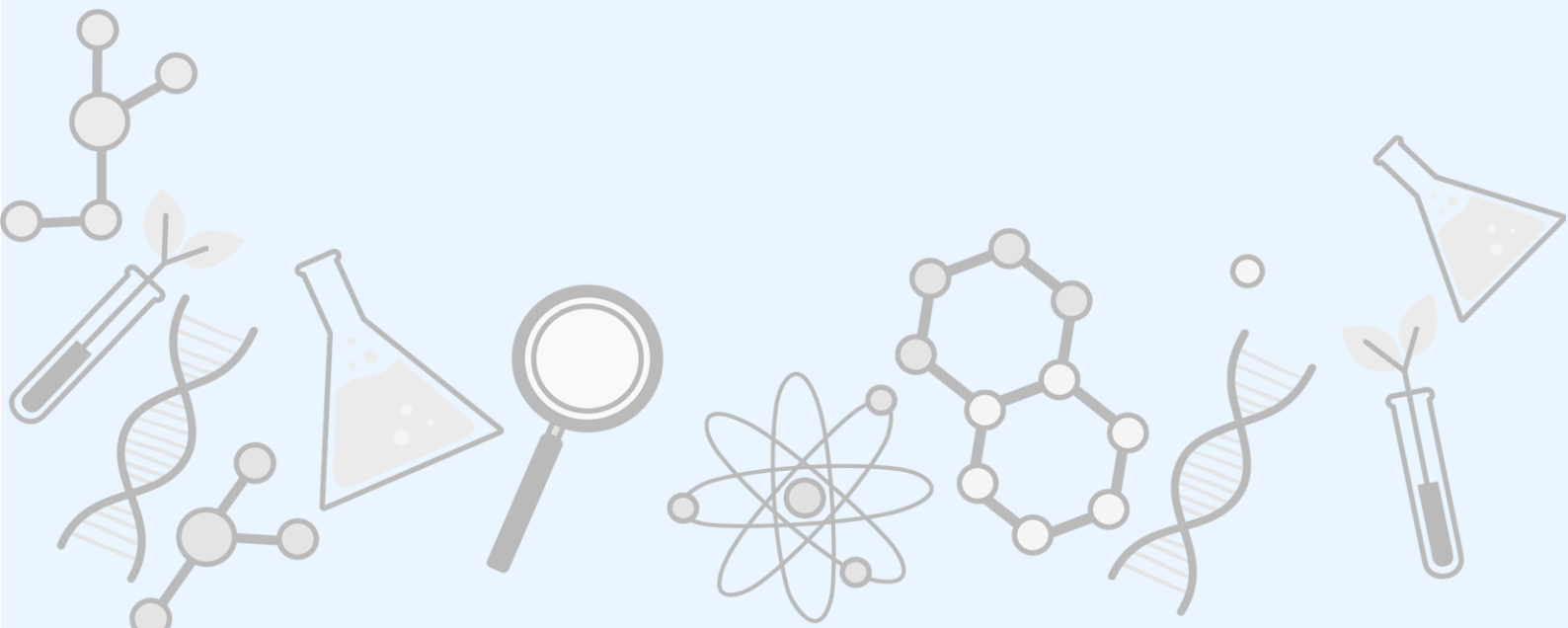
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Abstract:

Handwriting is an acquired skill, basically a neuromuscular task, which involves 27 bones and 40 muscles. It is habitual as well as individualized, and this individualization is the basic principle in document examination. Forensic Handwriting Examination is done in order to identify the individual based on his or her handwriting characteristics. The process of handwriting examination includes a careful and scientific examination of the evidences, comparing the unknown with the known samples of writing and reaching to a conclusion based on the observations. Calligraphy is the method where an artist look is given to the formation of the letters. It did not focus on the speed of writing, but focused on the way the letters were being written. As a result, it gives an overall beautifying appearance of the letters. This study aims to analyze and detect the forgery of signature done by the well-trained calligraphy artists. The study is done based on the two basic principles of handwriting, which are: (1) No two people can write in an exact same manner in an extended writing sample, and (2) All samples of writing contain natural variation, such that even two writing samples of the same writer cannot be alike. For this study, five standard samples of varying skill levels were considered, and an attempt was made to understand as to how efficiently can the calligraphy artist forge each of the standard samples.

Keywords: Forgery, Handwriting, Calligraphy, Skill, Questioned Documents

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USE OF HANDWRITING CHARACTERISTICS TO PREDICT PERSONALITY TRAITS IN POPULATION OF CENTRAL INDIA

Pallavi Mandaokar ¹, Shrutee Chavan¹, Dr. Praveen Kumar Yadav¹

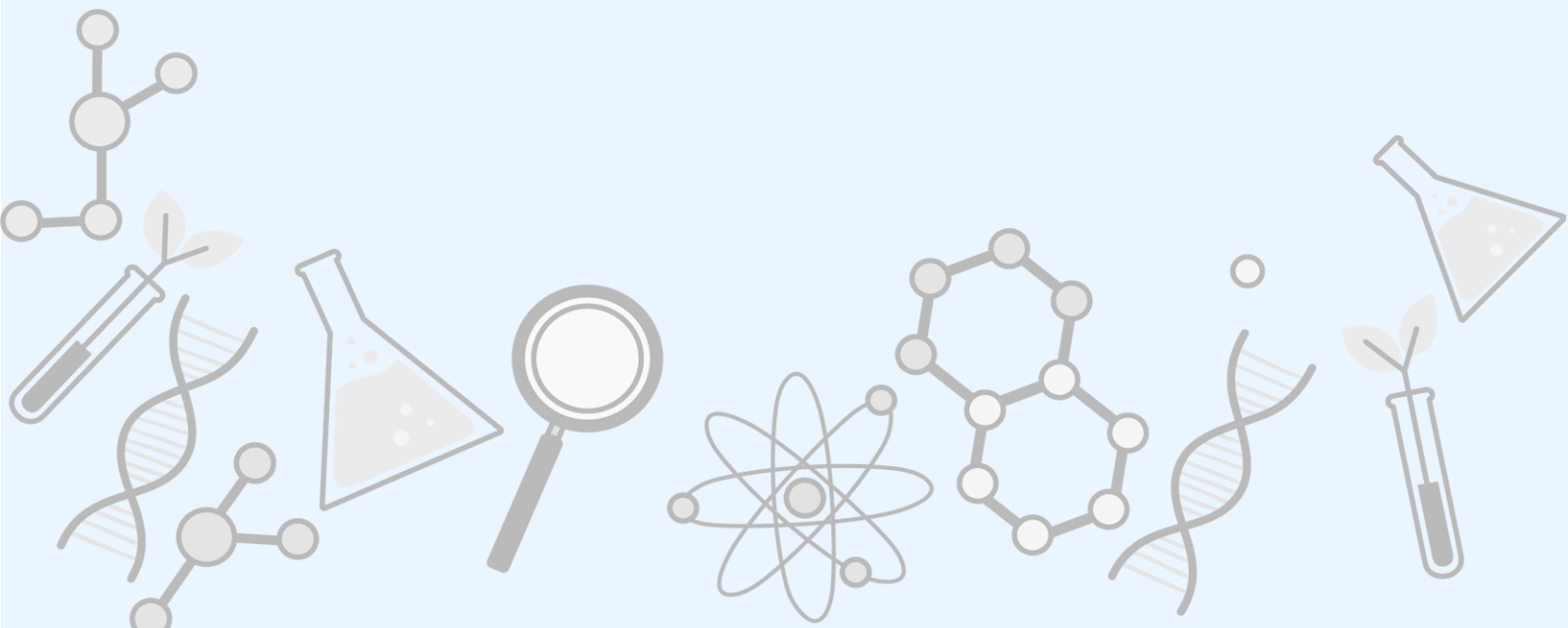
¹Assistant Professor, Sandip University, Nashik, Maharashtra

Abstract:

Graphoanalysis is the study of personality based on the handwriting characteristics of an individual. Various personality attributes such as introversion and extroversion, sensing and intuition, thinking and feeling, anxiety and toughness, self-control and dependence, intellect and confusion, inferiority and superiority, etc. can reflect in one's handwriting. By examining the handwriting of an individual, one can decipher their personality traits which can further help in narrowing the suspect pool. In the present study, the handwriting samples from 300 individuals (100 males and 200 females) were collected in the Sandip University, Nashik, Maharashtra. The personality of these individuals was examined using MBTI, 16PF, and FFM personality tests. The personality features were then mapped as per the handwriting examination. The handwriting features used in the present study included font size, spacing, slant, pen pressure, alignment, connecting strokes, strokes, margins, embellishments, slope, line quality, pen lifts, and movement. The data obtained was analysed using t-test, ANOVA, and chi square test.

Keywords: Handwriting Analysis, Graphoanalysis, Personality Traits, Psychology, Handwriting Characteristics

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EXAMINATION OF CRANIOFACIAL FEATURES IN PHOTOGRAPHS VIA ANTHROPOMETRIC ANALYSIS AMONG THE GENERATIONS OF INDIAN FAMILIES WITH THE AID OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Paras Sharma¹, Dr. Priyanka Verma¹

¹Chandigarh University

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Abstract:

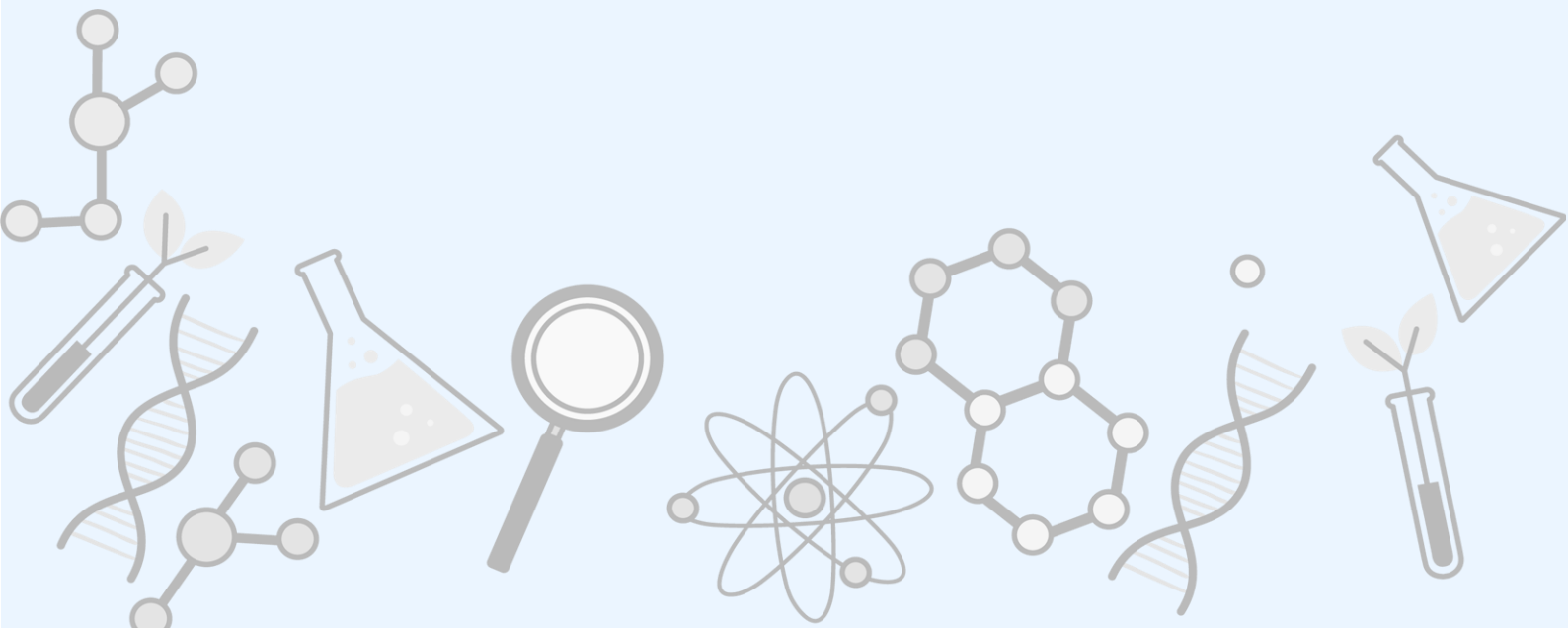
Background: This study is about craniofacial inheritance patterns in Indian families using artificial intelligence and machine learning. It has potential applications in forensic medicine as phenotypic concordance can be assessed quantitatively.

Methods: Facial features were extracted from images of three generations of family members through computer vision algorithms. Generation relations were analyzed by employing learning models such as linear regression, random forest, and dimensionality reduction methods.

Results: A correlation between the facial phenotypes of ancestors and descendants was found by machine learning; the model prediction accuracy was above 95%. Such results provide convincing support for high heritability hypotheses and intergenerational stability theories.

Conclusion: The AI-assisted anthropometric analysis reveals that craniofacial characteristics depend on genetic factors and are usually inherited within a family lineage. These digital technologies and findings are contributing to enhancing the ability of computational science in reconstructing faces with limited historical information.

Keywords: machine learning, computer vision, digital anthropometry, craniofacial genetics, computational forensics



AN OVERVIEW: - COCAINE

Sahil Kumar¹, Bhumika¹, Yash Singh, Ashlesha Bhardwaj¹

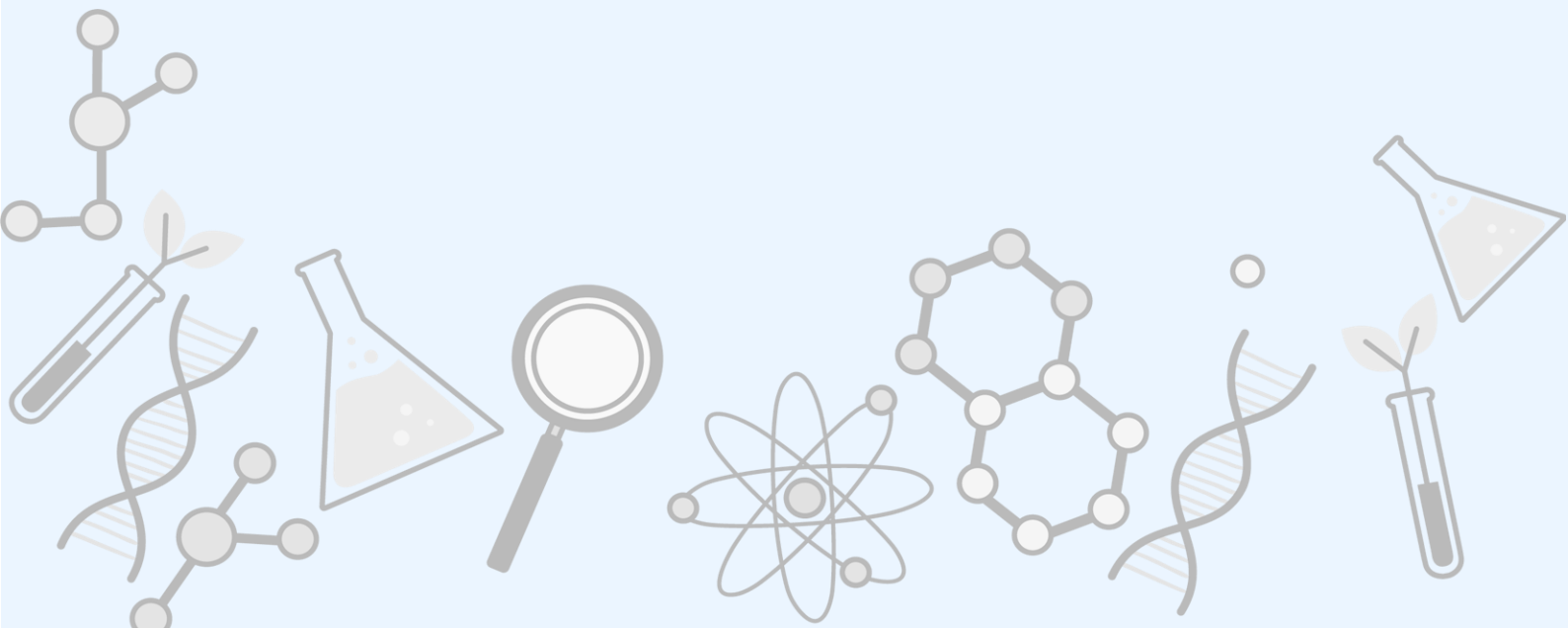
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Abstract:

Cocaine is a potent stimulant. It is derived from the coca plant. Coca ethylene is produced when cocaine and ethanol are used together. Numerous other processes, such as agitated delirium, cardiac arrhythmias, and overstimulation of the central nervous system, can also be attributed to cocaine-induced death. Cocaine has a long history of use and abuse. It explores the classification of cocaine and its impact on individuals and society. It is to be noted that the classification of cocaine may vary in different countries or regions. Cocaine functions differently from other local anaesthetics in that it can prevent the reuptake of norepinephrine, dopamine (DA), and serotonin (5-HT). Cocaine is readily absorbed by smoking, intranasal, and intravenous methods. This review paper provides an in-depth knowledge of the pharmacology, effects, and risks associated with Cocaine consumption. It will also discuss treatment options for individuals struggling with Cocaine addiction. However, cocaine is also highly addictive and can have serious negative consequences on physical and mental health. Cocaine is known for its addictive properties and potential for abuse. Understanding the classification of cocaine is crucial in comprehending its legal status and implications for public health and policy. This paper aims to delve into the various classifications of Cocaine and their implications for individuals and society.

Keywords: Cocaine, Stimulant, Pharmacology, Coca ethylene, Legal status

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ESTIMATION OF FEMORAL LENGTH FROM BONE FRAGMENTS

Shrutee Chavan¹, Dr. Renu Devi¹

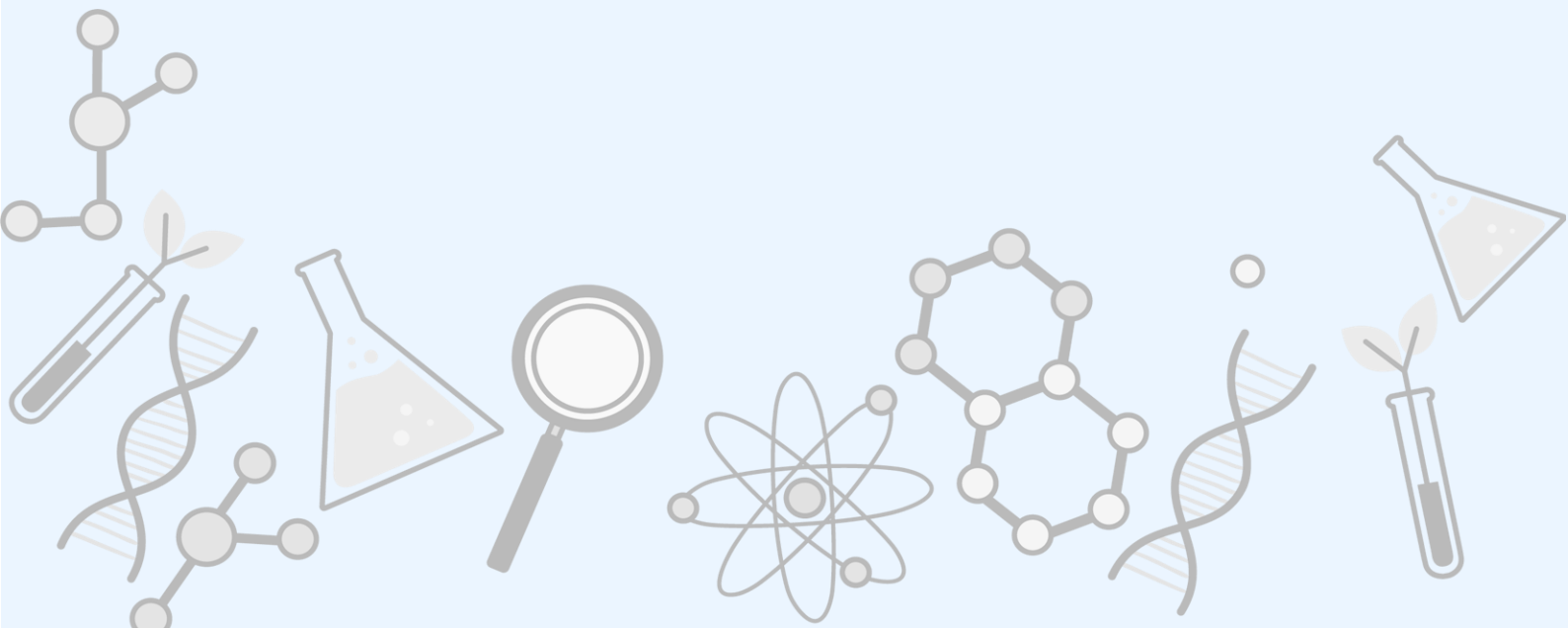
¹Assistant Professor, Sandip University, Nashik.

Abstract:

Forensic anthropology plays significant role in determination of sex, race, age, stature of an individual. Forensic anthropology typically deals with situations involving burned, mutilated, and fragmented human remains. Stature identification becomes essential for personal identification in cases where the individual cannot be identified by morphology. In the present study, a correlation between various fragmentary lengths of femur and the maximum femoral length has been calculated. The following parameters have been included in the study (maximum length, upper epiphyseal breadth, vertical diameter of the head, transverse diameter of the head, circumference of the neck, circumference of the head, transverse diameter at the middle of the shaft, sagittal diameter at the middle of the shaft, mid shaft circumference, transverse diameter at the upper half of the shaft, sagittal diameter at the upper half of the shaft, upper shaft circumference, transverse diameter at the lower half of shaft, sagittal diameter at the lower half of shaft, lower shaft circumference, bicondylar breadth, height of the medial condyle, breadth of the medial condyle, height of the lateral condyle and breadth of the lateral condyle) and were measured on 106 right and 111 left femur bones. Significant results were found for maximum length and breadth of medial condyle (BMC) and can be successfully used for estimation of femoral length which will eventually determine stature of the individual.

Keywords: anthropology, stature, femoral length, regression equation, breadth of medial condyle (BMC)

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SPECTROSCOPIC CLASSIFICATION OF TATTOO INKS AUGMENTED WITH CHEMOMETRICS

Praveen Kumar Yadav¹, Pallavi Mandaokar¹, Shruti Chavan¹

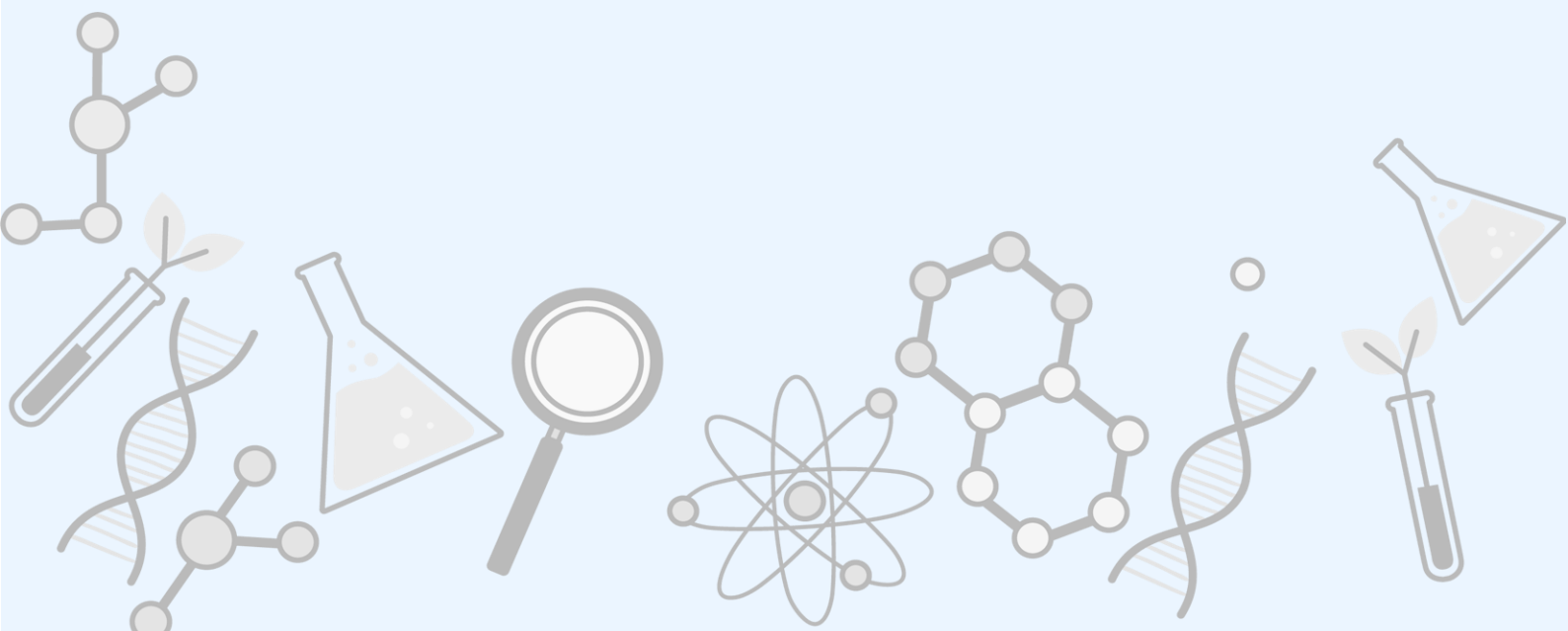
¹Assistant Professor, Sandip University

Abstract:

Examining tattoo inks forensically is vital in criminal investigations, helping law enforcement identify suspects, establish timelines, and link individuals to specific crimes. The composition of tattoo inks involves pigments that are suspended in a carrier fluid, enabling them to act as individual chemical markers, distinguishing one tattoo from another. To thoroughly analyze these inks, it is necessary to adopt a multidisciplinary approach that combines the expertise of chemistry, microscopy, and spectroscopy. The examination of tattoos in forensic science includes analyzing and determining the chemical composition of the inks used. The presence of distinct formulations employed by different tattoo artists can contribute to differences in the composition of pigments. The utilization of spectroscopic techniques, including infrared spectroscopy and mass spectrometry, offers the capability to meticulously examine the molecular structure of pigments and effectively determine the precise compounds present within the ink. This information helps investigators trace the origin of tattoos or link them to a particular artist or source. In the present study, tattoo inks of different brands were analyzed using attenuated total reflectance (ATR) – fourier transform infrared (FTIR) spectroscopy. The generated data was then analyzed using chemometric tools such as principal component analysis (PCA) and linear discriminant analysis (LDA) to differentiate tattoo inks based on their brands.

Keywords: Tattoo inks, ATR-FTIR spectroscopy, chemometrics, principal component analysis (PCA), linear discriminant analysis (LDA)

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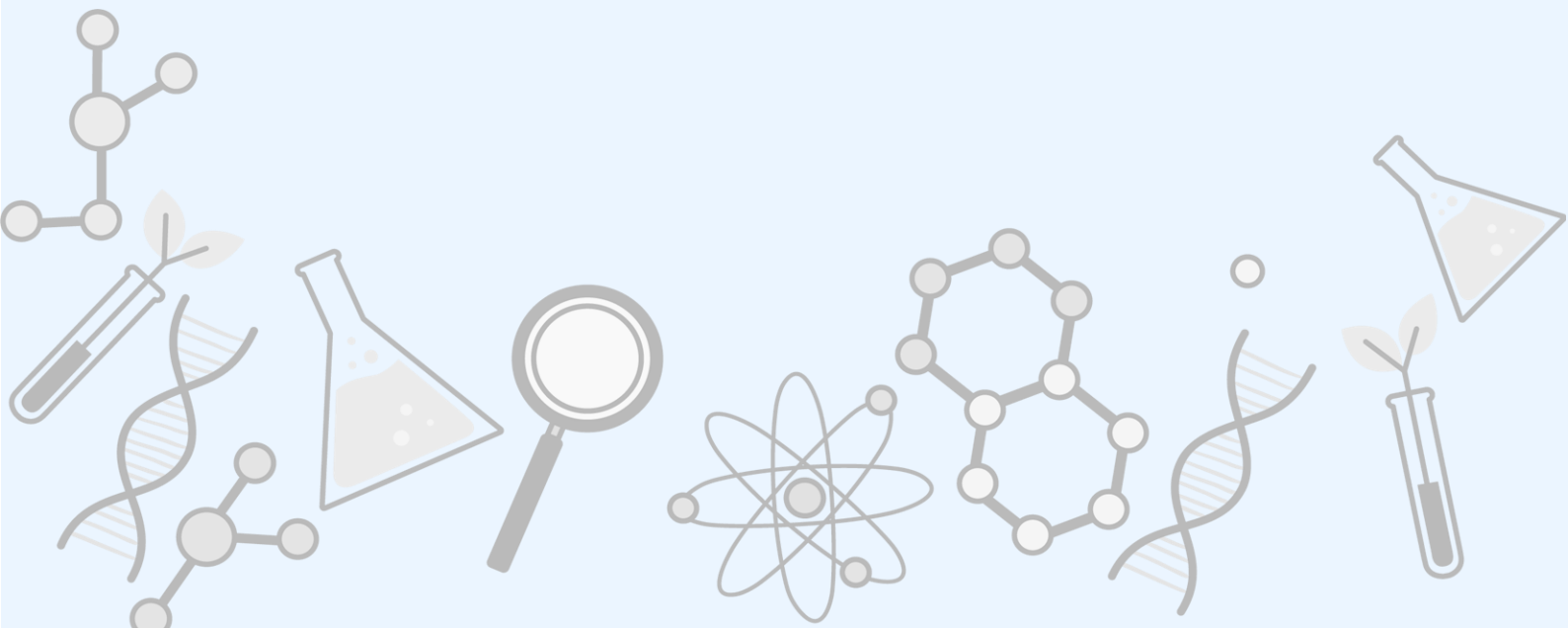
SECURE SPHERE: STRENGTHENING INDIA'S DIGITAL ENVIRONMENT TO COMBAT CYBER ATTACKS

Shubham Sahoo¹

¹Student, Lovely Professional University, Punjab

Using modern risk assessment technology, Secure Sphere, a revolutionary smartphone software, strengthens digital security in India, the second largest online market globally. With more than 560 million internet users and expected to grow to 650 million by 2024, the nation is confronted with an expanding cyber threat environment. Telangana registered 1,205 of the 27,248 cybercrime instances reported countrywide in 2018. This research project examines how Secure Sphere uses behavioral analysis to build customized user profiles, acting as a proactive protector of digital identities. In order to help avoid fraud, the software alerts users in real time to potential online dangers. Additionally, Secure Sphere encourages the use of secure communication channels and instructional courses on community defense tactics. Strong cybersecurity measures are clearly needed, as India is ranked third among the top 20 countries that have been victims of cybercrime. In addition to ensuring privacy controls and working with security experts, Secure Sphere encourages users to take preventative security actions. This study highlights the significance of technology solutions in protecting the digital landscape by illuminating Secure Sphere's role in reducing risks and forging a unified front against the growing cyber threats in India. The research explores the ways in which Secure Sphere strengthens the country's cybersecurity through the use of User Profiling, Behavioral Analysis, Risk Time Risk Alerts, Educational Modules, Secure Communication Channels, Community Reporting Features, and Privacy Controls. Secure Sphere uses behavioral analysis and user profiling to create personalized user profiles in response to the ever-changing cyber threat landscape. This allows for real-time alerts about possible online hazards. By offering Risk Time Risk Alerts, the program goes above and beyond conventional precautions by making sure users are alerted as soon as possible, which helps avoid fraud.

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EFFECT OF CHLORPYRIFOS ON THE DEVELOPMENT OF *Lucilia sericata* (Diptera: Calliphoridae)

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²Prof. (Director) IQEAC, Sharda University, Greater Noida, U.P.

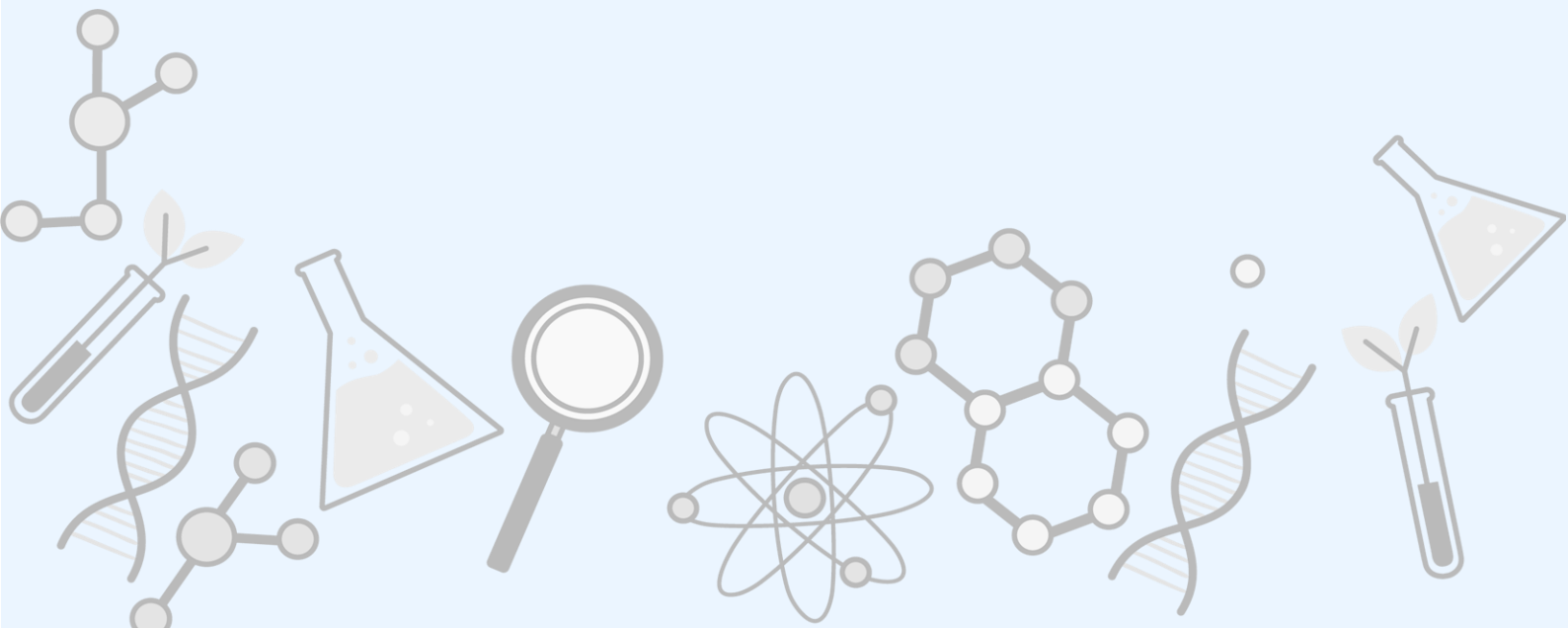
sally.lukose@sharda.ac.in

Abstract:

Entomotoxicology investigations use analytical methods and equipment to detect chemical compounds in carrion insects that feed on decomposing tissues. Carrion flies consume several substances while feeding on corpses. Insects found on corpses are used to analyze hazardous chemicals qualitatively and quantitatively. Due to these compounds, flies' cellular physiology can be altered, leading to faster or slower development. Identifying these compounds can help determine the cause and time of death. To date, little is known about the effects of pesticides on blowflies, as entomo-toxicological research has primarily focused on drug detection. Pesticides are more affordable than drugs, but they pose a household hazard and can be used for poisoning at a crime scene.

The study investigated the impact of chlorpyrifos on the immature blowflies' development time, morphology, and survival rate. Chlorpyrifos is used to kill insects and worms of various plants, but due to its higher use, it has been associated with death from suicide and accidental poisoning. Larvae were reared on pork tissues (muscle and liver) tissues spiked with chlorpyrifos at concentrations found in chlorpyrifos poisoning cases in humans and animals. The control pork tissues (liver and muscle) were spiked only with water. The effect of chlorpyrifos concentration on *Lucilia sericata* was studied under different temperatures (20°C, 25°C, and 30°C) and humidity conditions. Results showed that the morphological parameters, i.e., weight, width, and length were positively associated with chlorpyrifos and affected the development time.

Keywords: Chlorpyrifos, Pork muscles, Pesticides, Entomotoxicology



DEPRESSION, ANXIETY, AND STRESS AMONG MALE AND FEMALE POLICE PERSONNEL

Nandha Kumara Pujam. S

Associate Professor of Clinical Psychology, Rashtriya Raksha University, Shivamogga Campus,
Karnataka.

Abstract:

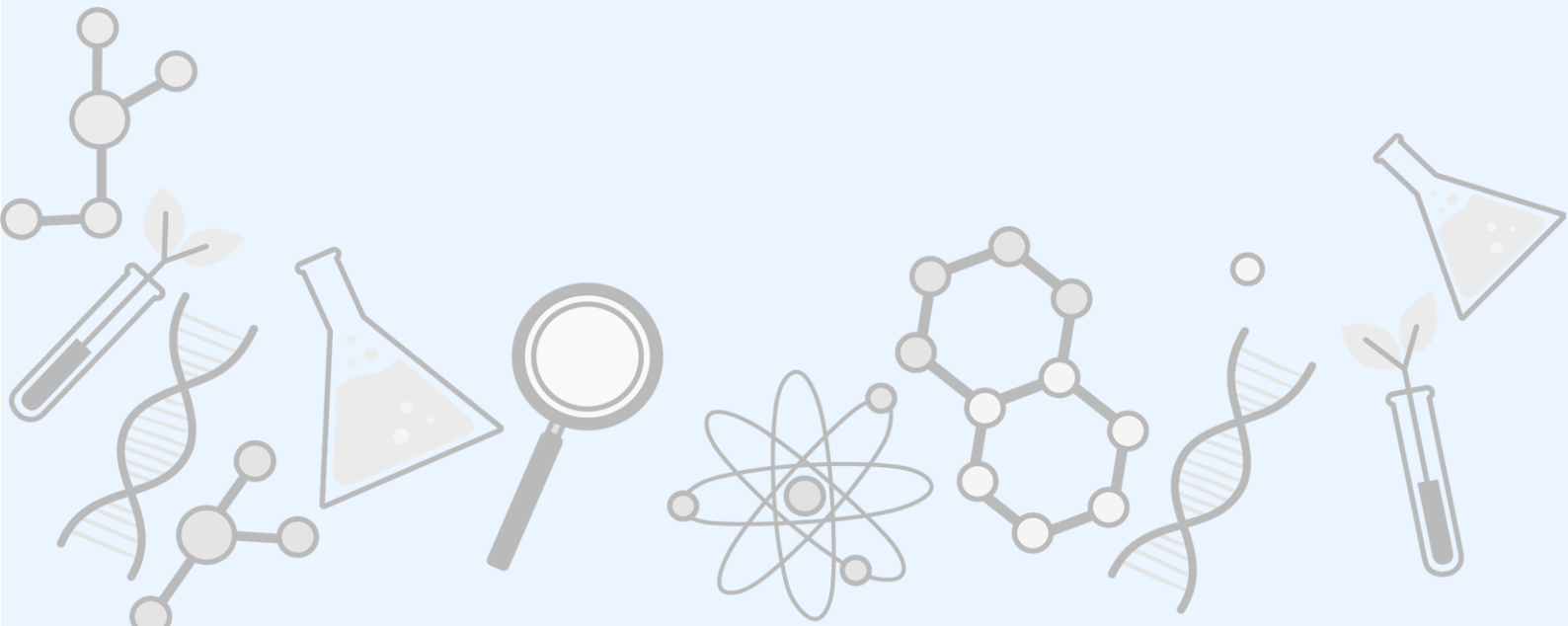
Background: Police personnel of constable rank experience significant stress levels due to the nature of work and the long duration of working hours. Earlier research has focused much on the mental health of male police personnel; there is a lack of studies on gender differences.

Methods: The present study is a cross-sectional study conducted at Shivamogga district of Karnataka. A total of 42 police personnel (21 male and 22 female) were selected using the simple random sampling method and administered the depression, anxiety, and stress scale (DASS-21). Statistical analysis was done using SPSS version 16.

Results: 21 male and 21 female police personnel were screened for depression, anxiety, and stress. Among 21 female police personnel, 17 (81%) were married and 4 (19%) were unmarried; the mean age was 38.90+10.06 and the mean education was 14.19+2.08. Among 21 male police personnel, 9 (42.9%) were married and 12 (57.1%) were unmarried; the mean age was 33.28+ 9.52; and the mean education was 14.38+1.59. The mean comparison of depression, anxiety, and stress showed no significant difference among male and female police personnel.

Conclusion: Depression, anxiety, and stress are present in both male and female police personnel.

Keywords: depression, anxiety, stress, police personnel, mental health, DASS-21, constable.



FORENSIC INSIGHTS INTO THE DARK SIDE OF ATHLETIC PERFORMANCE: HEALTH, ETHICS, AND DOPING

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¹ Ph.D. Scholar, School of Forensic Science, National Forensic Sciences University, Gandhinagar, Gujarat, India

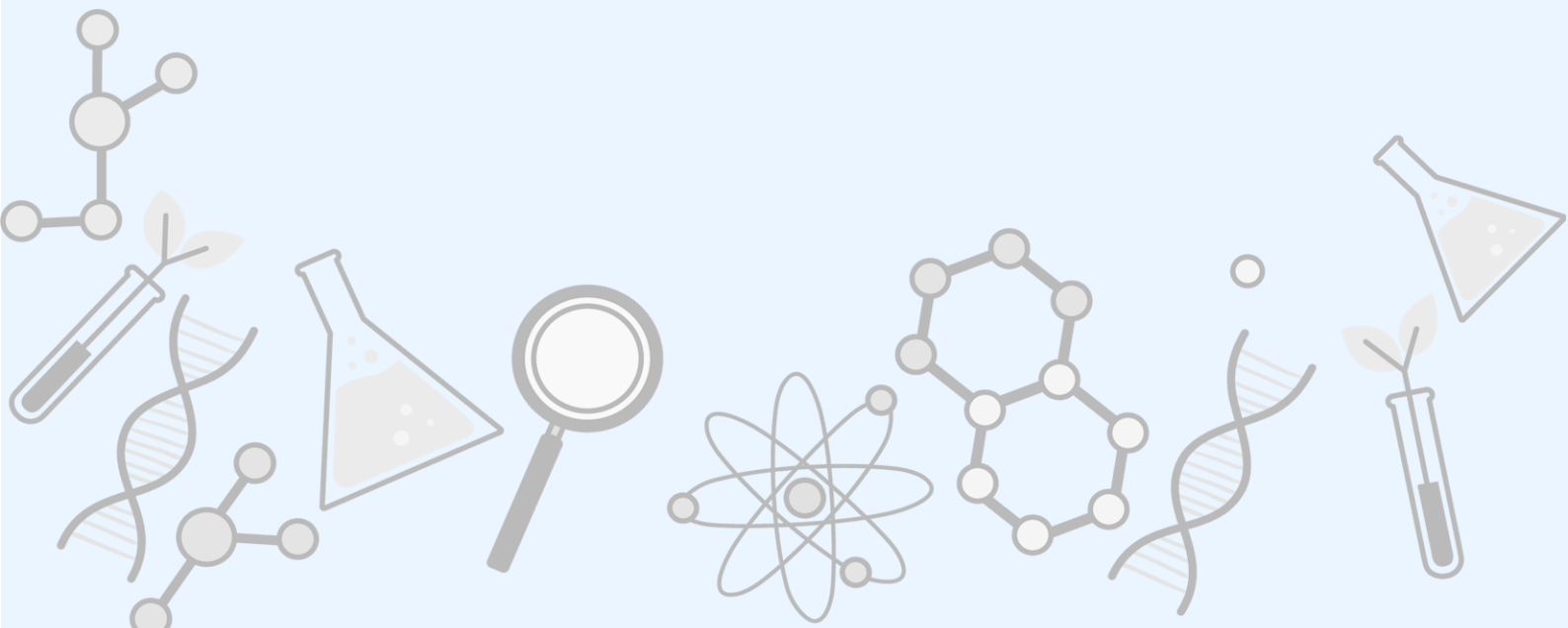
² Associate Professor, School of Forensic Science, National Forensic Sciences University, Gandhinagar, Gujarat, India

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Abstract:

The influence of performance-enhancing drugs (PEDs) raised doubt on the veracity of successes in the world of sports, where the persistent quest for excellence and victory is held in the achievements. This presentation explores the complex relationship between performance, health, and ethics in sports doping. The availability of PEDs and advances in technology have driven players to dangerous heights of athletic skill. The ravenous desire for victory has led to the development of new, untraceable doping drugs. This presentation also sheds light on the broader societal impact of doping, highlighting the demise of fair play and trust and the disillusionment of supporters. The avoidance of established detection procedures has harmed sports and prompted ethical concerns. Despite the limitations of sports, the challenge of doping is also a concern in public health. Misuse of drugs for non-medical purposes exposes individuals to health risks, including addiction, serious complications, and even death. In conclusion, the demand for action encompasses aspects of education, research, regulation, and unwavering accountability to ensure that sports remain a beacon of genuine human achievement despite the shadows of performance-enhancing drugs.

Keywords: Performance-enhancing drugs (PEDs), Forensics, Doping, Athlete, Addicts.



VOLATILE PROFILING OF COUGH SYRUPS FOR FORENSIC PURPOSES USING GC-MS

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¹Kristu Jayanti College (Autonomous), Bengaluru

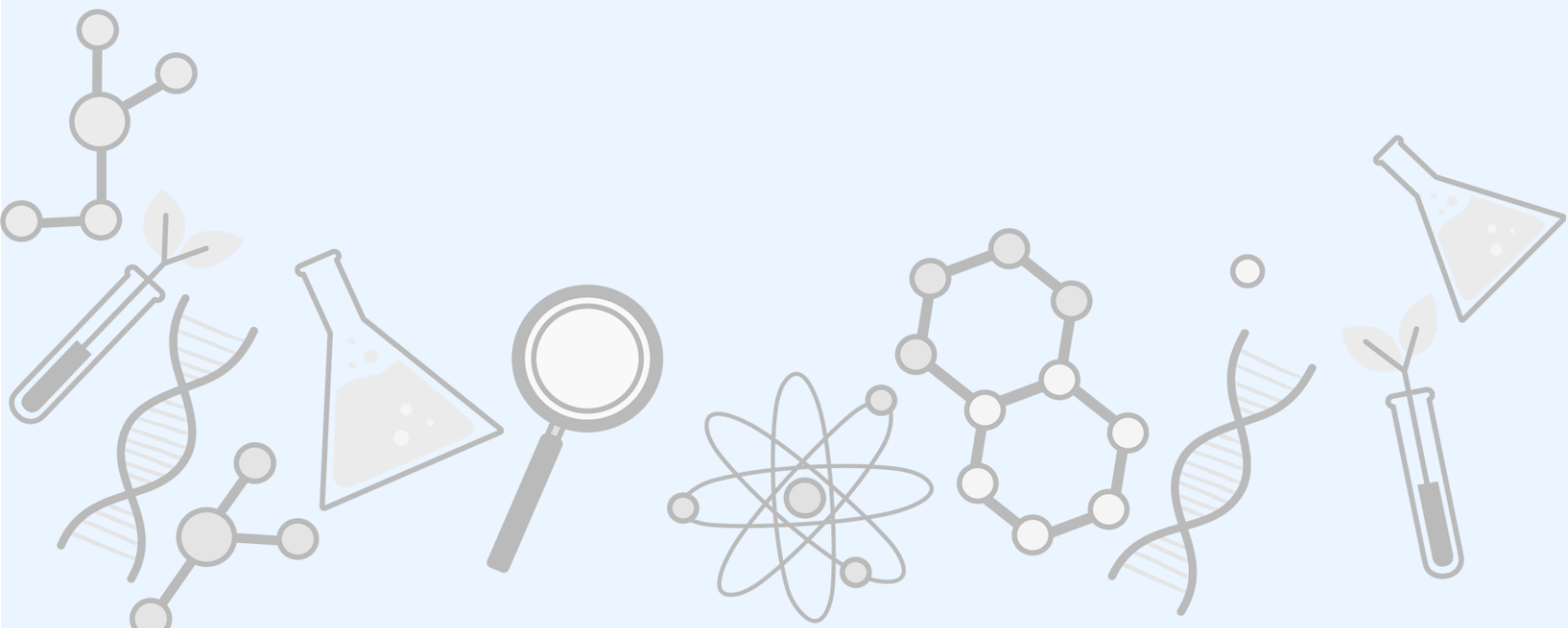
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Abstract:

Cough syrup is a liquid drug used to treat coughs and colds. It comprises several components such as cough suppressing substances in conjunction with various chemically active chemicals. A thorough qualitative examination of various cough syrups was conducted in this study, in which 20 randomly selected cough syrup samples were analysed using proper Liquid-Liquid Solvent extraction protocol, followed by volatile profiling of the samples using Gas Chromatography tandem Mass Spectrometry. The findings revealed 349 organic volatile components classified as Alcohols, Aldehydes & Ketones, Organic acids, Esters, Ethers, and other miscellaneous substances. A few analgesics (Dihydromorphine), semi-synthetic opioids (Dextromethorphan), and morphinans (Norlevorphanol) were also discovered but were not listed on the label. Because to its high efficiency and low error rates, we employed GCMS in this investigation to evaluate the organic volatile components contained in each sample.

Keywords: Cough syrups; GCMS; Solvent extraction; Opioids; volatile profiling

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QUANTUM SEARCH ALGORITHM IN FORENSIC FILE SYSTEM ANALYSIS

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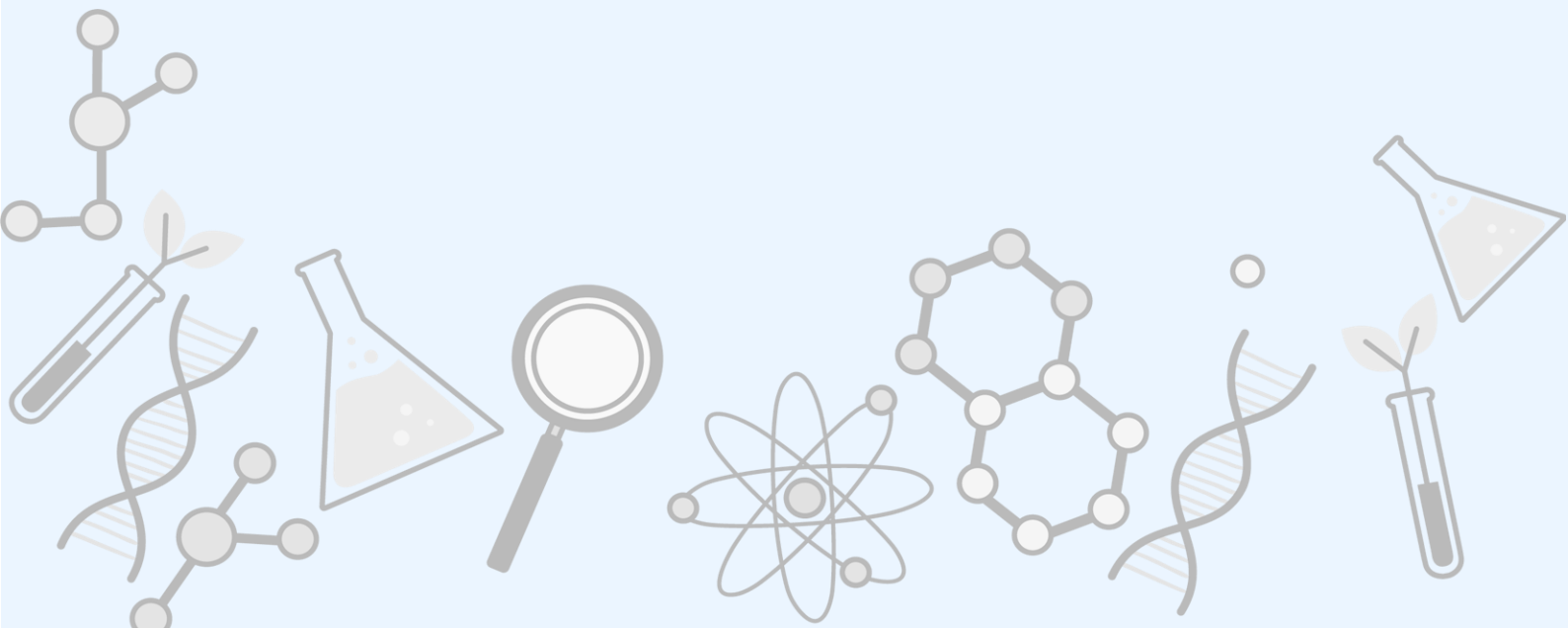
Abstract:

File system is the method which is being used by the operating systems and various storage devices to manage and organize the files and the directories. File system is analysed and examined to gather the evidence for the legal or investigation purposes generally termed as “Forensic File System Analysis”. Digital forensics plays a key role in analyzing electronic devices and data to obtain evidence for legal investigations. With the recent advancements in computation on quantum platforms Grover’s Search Algorithm can speed-up the file retriever and data recovery processes in file system analysis. In the present work we have discussed various file formats and how Grover’s Algorithm can improve the data recovery in various forensic file system analysis.

Keywords: Quantum computation, Grover’s Algorithm, File system analysis.



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THYMOLPHTHALEIN: A POTENTIAL CORRUPTION MARKER FOR DETECTING BRIBED CURRENCY IN TRAP- CASES

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¹Assistant Professor, Dept. of Forensic Science, Kristu Jayanti College, Bengaluru, Karnataka

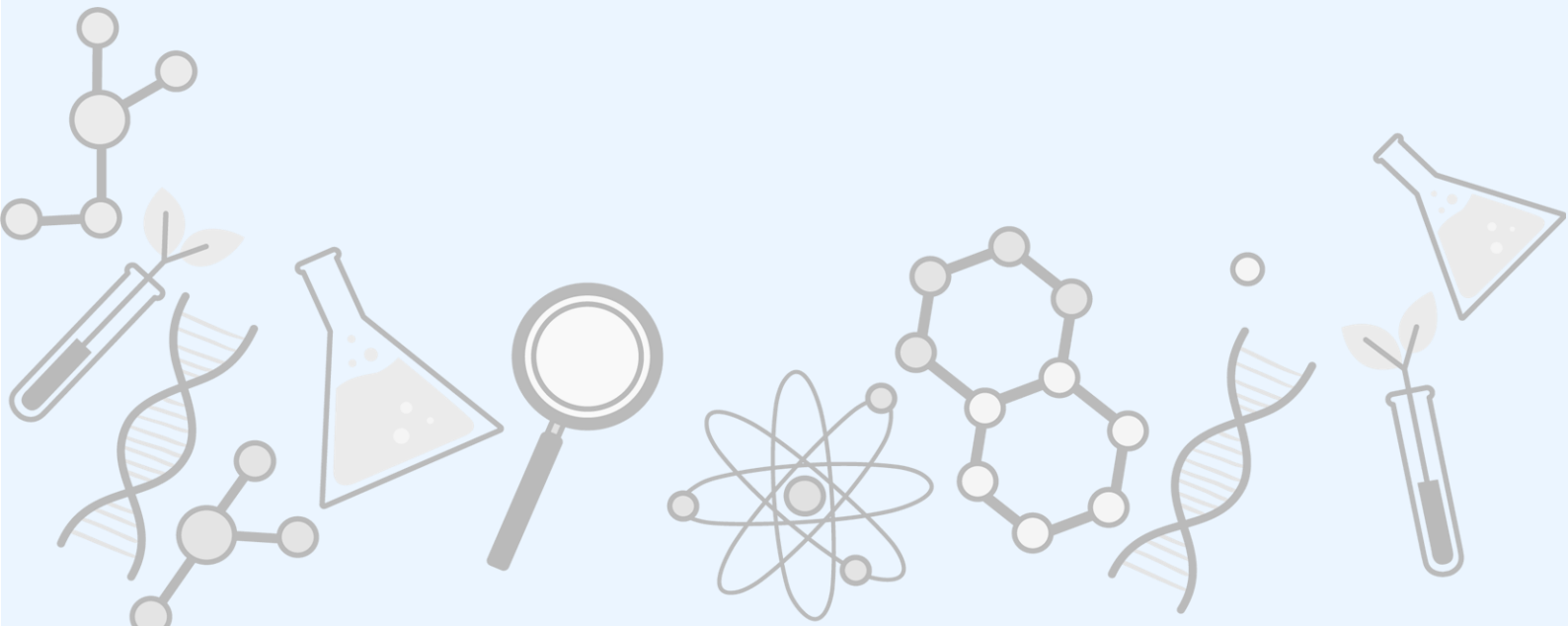
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Abstract:

Corruption, especially bribery, presents a major obstacle to societies globally, eroding trust within institutions and hindering socio-economic development. Conventional approaches to identifying bribery typically depend on indirect evidence and statements from witnesses, which may be inconsistent and difficult to secure. The present study explored a novel chemical technique for trapping cases involving Thymolphthalein. Thymolphthalein can be utilized as a tool for bribe detection, according to the findings of this study as it demonstrates a noticeable colour alteration when exposed to basic substances, providing a straightforward and dependable method for identifying potential illicit transactions. The resulting colour after interacting with alkaline conditions remains stable, unlike phenolphthalein. The distinct blue markings found on the hand or fingers, the blue-spotted clothing, and the blue-tinted currency notes potentially serve as compelling legal evidence against the individual in question.

Keywords: Thymolphthalein, bribery, corruption, detection, pH-sensitive indicator.

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ANALYSIS OF ALLOPATHIC ACTIVE INGREDIENTS IN HERBAL DIABETIC FORMULATION

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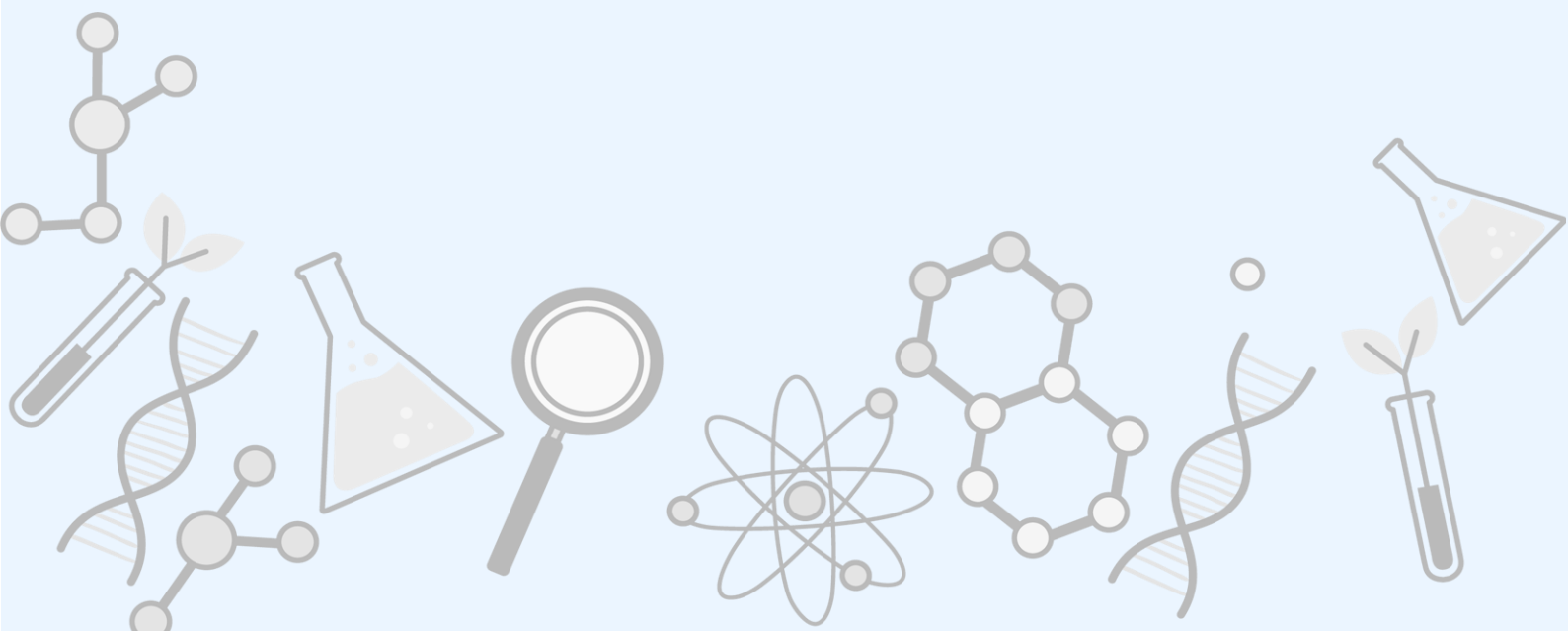
⁴PhD Research Scholar, Department of Forensic Science, SHUATS, Prayagraj

⁵Assistant Professor, Department of Forensic Science, SHUATS, Prayagraj

Abstract:

Now a days the popularity of herbs based products is increasing tremendously due to their minimal side effects and ease of accessibility. As the demand of herbal products has surged, the quality of these products in terms of purity and effectiveness has become a matter of concern. These herbal formulations, easily available in the market, claimed as purely herbal by the manufacturers, may contain synthetic substances as undeclared ingredients which are added to increase its pharmacological effect with an intent of gaining commercial benefit. Such an act of adulteration is defined under section 33E and is considered as offence under section 33I and 33J as described in Drug and Cosmetic Act, 1940. The present study focuses on detection of the adulterants in anti-diabetic herbal preparations sold in markets of Prayagraj, Uttar Pradesh and Ranchi, Jharkhand. In this study total twenty anti-diabetic herbal drug samples were analysed to check any possible presence of synthetic drug as undeclared ingredient by fast and easy method. FT-IR and TLC instrumental methods were used for analysing the samples and the presence of synthetic pharmaceutical ingredient Metformin was detected as an undeclared ingredient in these multi-component herbal medicinal products. The long-term use of these adulterated drugs containing allopathic ingredients, without consulting a medical practitioner, may lead to severe damage of vital organs and may develop drug resistance. Adulteration in polyherbal products or even in single herb products gives possibility to potentially fatal interactions with conventional drugs.

Keywords: Adulteration, Metformin, Herbal drug, FTIR, Anti-Diab



TECHNOLOGICAL ADVANCEMENT AND THEIR ROLE IN REDUCING DELAY IN CRIMINAL TRIAL

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¹Research Scholar, Delhi Campus, NFSU

²Professor, Delhi Campus, NFSU

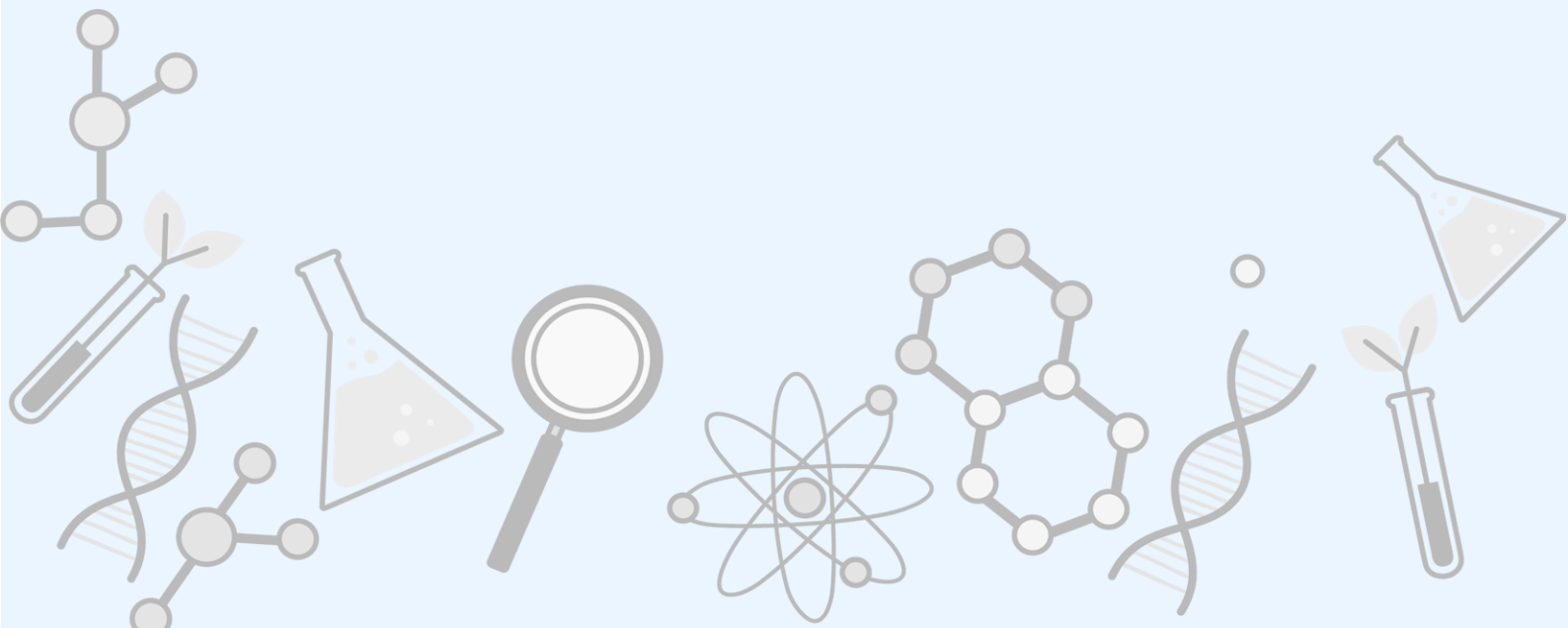
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Abstract:

India grapples with an overwhelming backlog of 44.24 million pending cases in its District Courts and 6.2 million pending cases in its High Court, a number that is increasing every year. This backlog stems from systemic bottlenecks spanning investigation, trial, and case resolution, defying the Right to Speedy Trial enshrined in Article 21 of the Indian Constitution. To address this, leveraging technology such as Artificial Intelligence, Machine Learning, and digital court systems holds promise in reducing case backlog. However, this digital transformation also presents challenges. Concerns about privacy breaches, data misuse, the digital divide, and technological proficiency must be navigated to address these challenges and make it useful for the criminal justice system and help in reduction of delays in criminal trial. This research scrutinizes the causes of trial delays and the existing technological landscape in India's judiciary. It emphasizes the need to utilise technology while addressing challenges. Recommendations focus on a balanced approach, maximizing technology's efficiency while safeguarding privacy and ensuring equitable access to all stakeholders. In summary, while technology advancements offers solutions to expedite criminal trials and reduce the delays, there is a need for cautious and inclusive strategy to overcome hurdles and harness its potential within the criminal justice system.

Keywords: Right to Speedy Trial, Delay in Criminal Trial, Technological Advancements

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UNDERSTANDING THE GLOBAL IMPLICATIONS OF GEOPOLITICS IN KEY CYBER INCIDENTS: A REVIEW ANALYSIS

Harshvardhan Singh¹, Jatin¹, Jyoti Rana³

¹B.A Security Management*

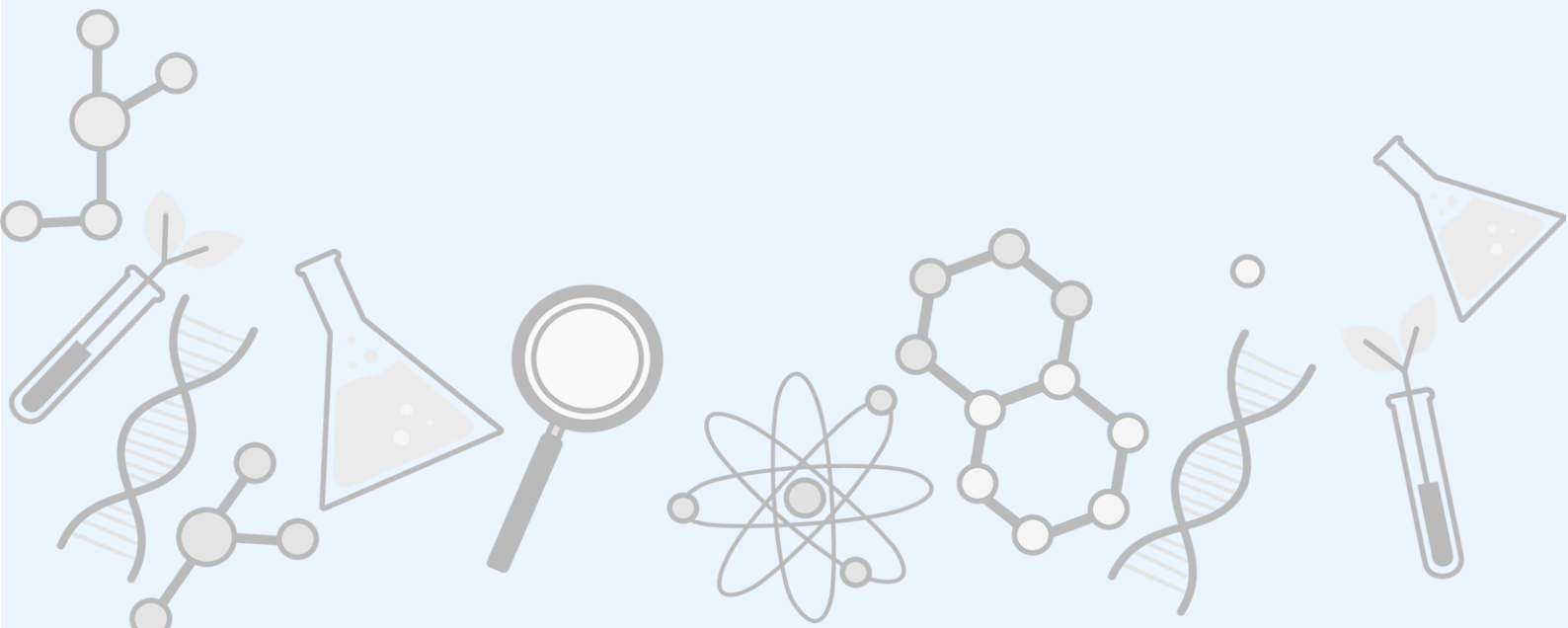
²Guest Faculty, Department of Criminology, Sardar Patel University of Police, Security and Criminal
Justice, Jodhpur, Rajasthan, India

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Abstract:

Cyber warfare has risen as strong tactics in reshaping the scene of global geopolitics. According to the FBI Cybercrime complaints increased by 69.4% from 2019 to 2020 and the global cost of Cybercrime was \$6 trillion in 2021. This paper conducts a comparative investigation of critical cyber episodes of different types like Operation Shady RAT, Operation Red October and Titan Rain represent state-sponsored cyber activities aimed at taking delicate data from government and organisations globally. Additionally, Aadhar information breach raises concerns about the security of enormous databases containing sensitive individual information. The Debit card information breaches in India and the Cosmos Bank Attack highlights the financial repercussions of cyber assaults. The SolarWinds Attack and Wipro information breach emphasise the potential for supply chain assaults to compromise national security. The WannaCry cyber assault illustrates the aimless nature of cyber dangers, affecting entities over borders independent of geopolitical affiliations. The findings propose the insight into understanding of the complex transaction between cyber security, geopolitics, and national interface and explains the multifaceted suggestions of cyber fighting on geopolitical dynamics in an interconnected world.

Keywords: Cyber Assault, Cyber Security, Geopolitics



INVESTIGATIONAL STUDY TO DETERMINE (ANGLE OF IMPACT) FROM BULLET HOLES BY 9MM BULLET IN DIFFERENT MATERIAL SURFACES WITH REFERENCE TO VARIABLE DISTANCES

Rishabh Gupta¹, Surbhi Mathur^{1*}

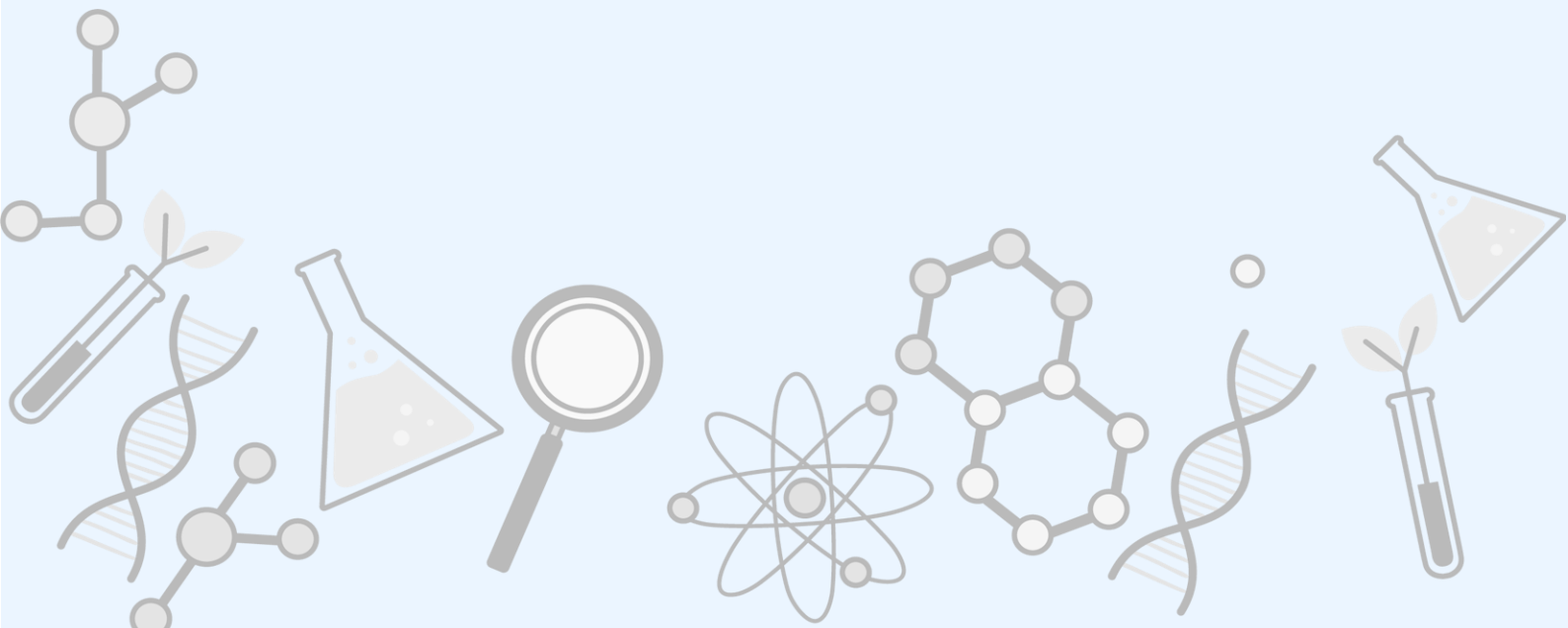
¹School of Forensic Sciences, National Forensic Science University, Gandhinagar, Gujarat, India

Abstract:

The primary aim is to observe the impact patterns formed by bullet holes in different material surfaces considering the closed and open crime scene involving multiple firing and accidental firing. The material surfaces which are most likely to come in contact with bullets are glass, wood, and ceramic tiles. The study is to observe the different patterns formed on these materials to help the forensic investigators and researchers in crime scene reconstruction. Issues faced during crime scene investigation includes-

- Linking material fragments to source.
- Shooter's location.
- Terminal ballistics of the surface.
- Angle of impact.
- Number of bullets fired.

This paper aims to aid these issues using physical properties of different materials and variables which occur during the experiment.



UNDERSTANDING SEXUAL HARASSMENT IN INDIA'S WORKPLACES: ISSUES AND CHALLENGES IN ACCESS TO JUSTICE

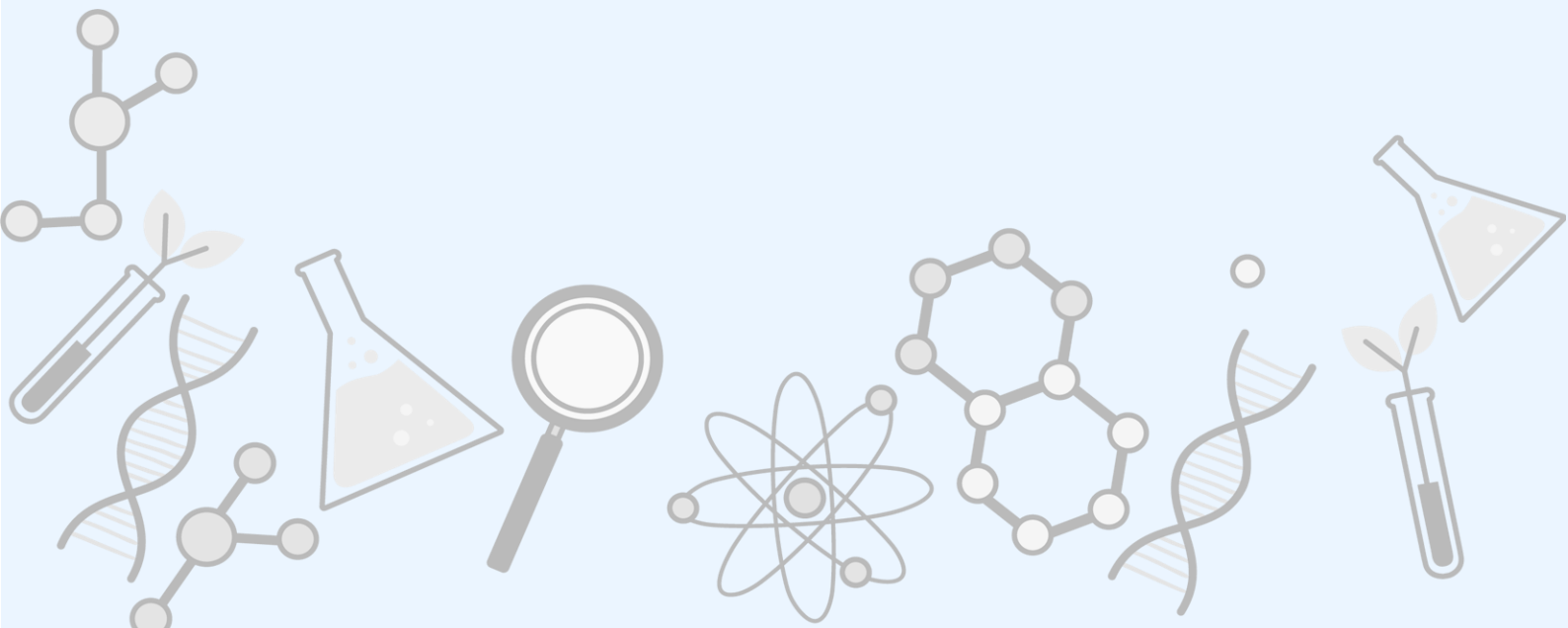
Bhaswati Bora

National Forensic Sciences University- Delhi Campus

Abstract:

Sexual harassment, is a pervasive global issue, affecting millions of women, with India confronting its pervasive presence despite existing laws. This article conducts a thorough exploration of the intricate landscape surrounding access to justice for victims of sexual harassment. The research depends on robust techniques like primary and secondary sources to underscore that sexual harassment is multi-dimensional and affects broadly women's lives. Findings expose a lack of reporting, rooted in deep-seated issues like gender bias, power dynamics, and societal norms. Scrutinizing existing legislative and administrative measures reveals complexities in implementation and gaps in protection. Causes and trends are explored, unravelling the influence of power, skewed gender ratios, and cavalier attitudes in perpetuating harassment. T This research carefully examines barriers to accessing justice including under-reporting, lack of knowledge, prejudice against female victims, and shame associated with sexual assaults. Analysis of organizational practices uncovers disparities in policy implementation, urging the urgent need for universally adopted workplace policies. A parallel study on private organizations in Delhi NCR underscores gaps in compliance and the imperative for clear penal consequences. The research underscores the urgent need for universally adopted and effectively enforced anti-sexual harassment policies. A parallel study of private organizations further emphasizes the gaps in compliance and the necessity for clear and impactful penalties.

Finally, the research proposes a series of recommendations to improve access to justice. These include strengthening legal frameworks, establishing fast-track courts, and implementing widespread sensitization programs. The article advocates for a multi-pronged approach, urging collective action to create a safer and more just environment for victims of workplace sexual harassment in India.



BEYOND THE BASICS: ADVANCED FEATURES OF OXYGEN FORENSIC SOFTWARE AND ITS IMPACT ON FORENSIC ANALYSIS

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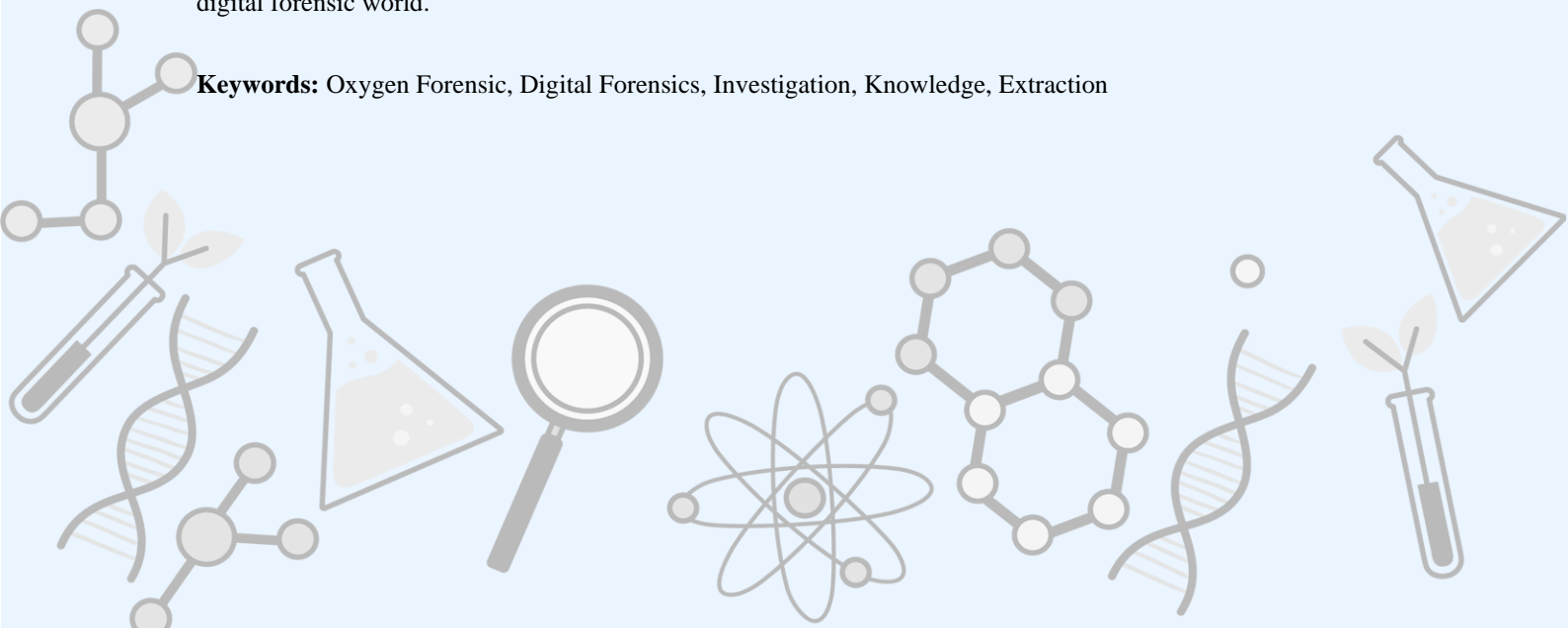
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Abstract:

Oxygen Forensic Software is a game-changer in the digital forensics field. It's like a powerhouse tool for those who seek the truth. Present work will take you on a tour of Oxygen Forensic Software where we will be discussing its tools, standard of procedures, norms, and strengths and weaknesses. The software offers a wide range of features, ranging from data extraction and analysis to advanced reporting capabilities with a user-friendly interface. Additionally, it can work with tons of devices and systems due to its flexible nature. Operational procedures with Oxygen Forensic Software involve systematic data extraction, followed by detailed analysis using built-in tools such as Timeline, Cloud Extractor, and Oxygen Social Graph. It values evidence integrity, making it fit in all legal procedures. Overall Oxygen Forensic Software emerges as an asset for the investigators for digital investigations, as it offers comprehensive features and tools making it userfriendly and easy to operate. Oxygen Forensic Software can extract data from various sources, including smartphones, cloud services, and IoT devices, providing a vast view of digital evidence. Challenges may arise in complex cases involving encrypted data or devices with advanced security measures. Furthermore, the reliance on third-party tools for certain functionalities may introduce dependencies and compatibility issues. The present work will focus on various aspects of Oxygen forensic software including its strengths, weaknesses, and its role in the digital forensic world.

Keywords: Oxygen Forensic, Digital Forensics, Investigation, Knowledge, Extraction



THE NEW AGE OF CYBERCRIME: AUDIO DEEPPAKES AND THEIR EMERGING ROLE IN DIGITAL DECEPTION

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¹Research Scholar, Department of Forensic Science, School of Bioengineering and Biosciences, Lovely Professional University, Punjab

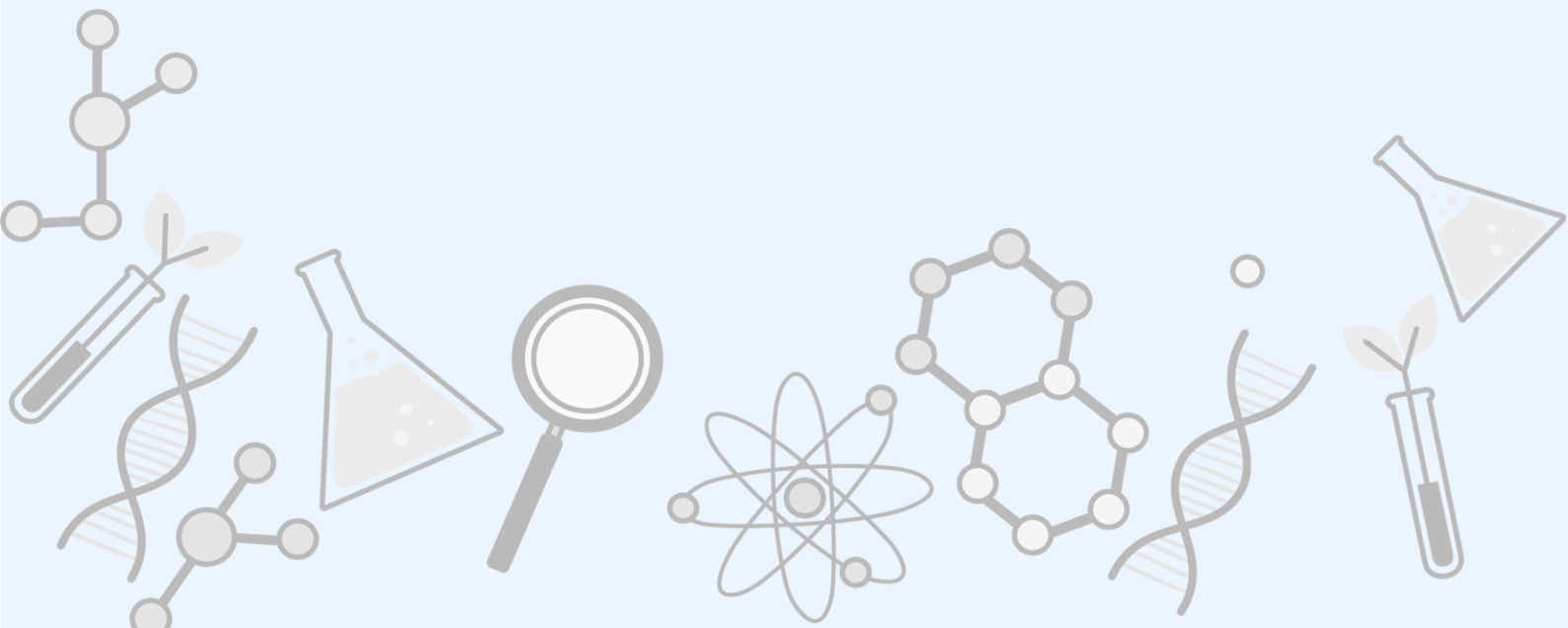
²M.Sc Student, Department of Forensic Science, School of Bioengineering and Biosciences, Lovely Professional University, Punjab

³Assistant Professor, Department of Forensic Science, School of Bioengineering and Biosciences, Lovely Professional University, Punjab

Abstract:

Audio deepfake technology, driven by improvements in machine learning and artificial intelligence has gained prominence in recent years. Audio deepfakes are the types of synthetic audio recordings that have been manipulated and made it sound like a person speaking something that he never spoke. It can be generated by using a variety of techniques, such as artificial intelligence, deep learning, and machine learning. This can be used for various malicious activities which include spreading misinformation, committing financial fraud, or impersonating individuals. This paper gives an insight into audio deepfakes, highlighting their developments, creation, negative side or the accompanying challenges, and detection technologies. The spread of audio deepfake technology creates significant ethical, legal, and security issues. So, there is an urgent need to develop a significant method for detecting the audio deepfake to reduce the negative impact. However, there are several challenges faced by the audio detection methods. The present work includes different types of generating methods of audio deepfake and also focuses on the impact of audio deepfake in the world. Despite these challenges, there is hope that effective detection methods for audio deepfake will be improved in future scenarios.

Keywords: Deepfake, Artificial Intelligence, Cybercrimes, Generative Adversarial Networks



FORENSIC JUSTICE FOR MARITAL RAPE VICTIMS IN INDIA: DECONSTRUCTING PATRIARCHAL WALLS THROUGH CRIMINAL JURISPRUDENCE

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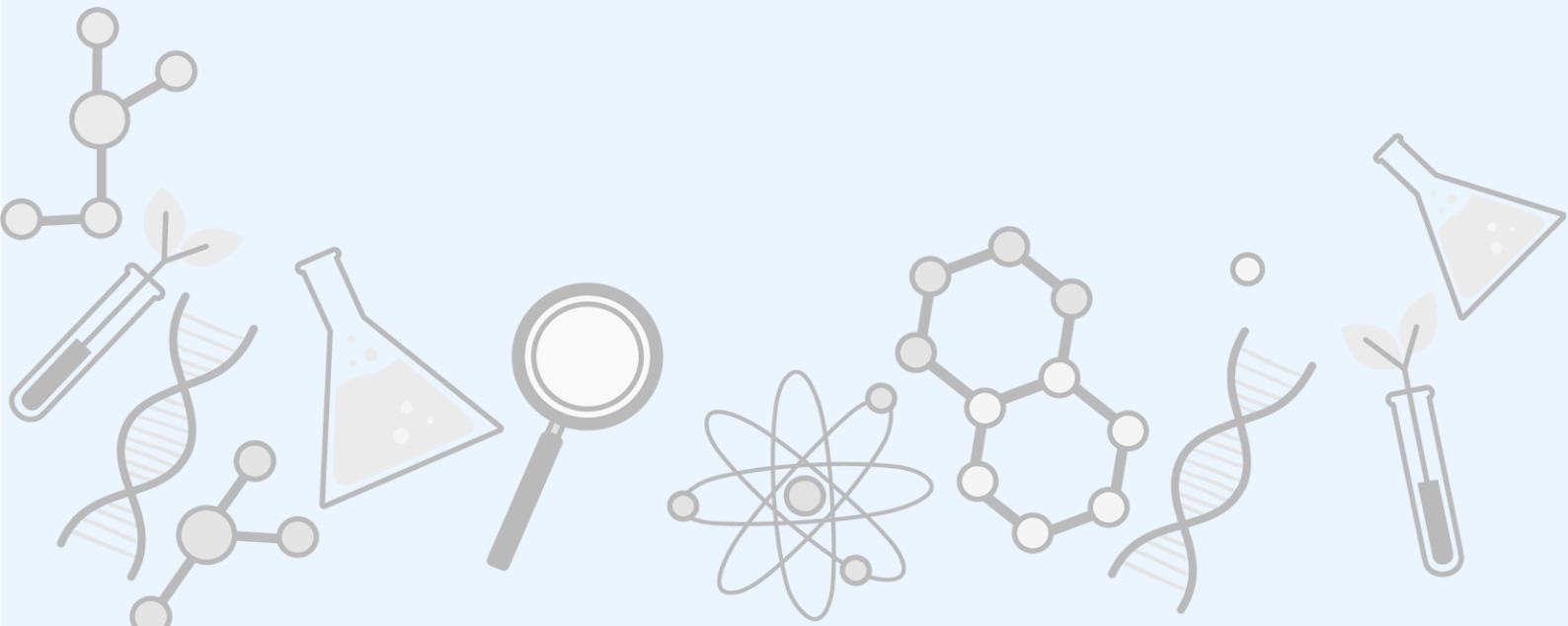
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Abstract:

Women would tell me about being raped and I had to sit there and think as a lawyer, ‘Yes, but were they married?’ If (yes,)... I had no options to help them...” These words uttered by Sarah Lerner, London-based lawyer in 1970s, felt foreign to lawyers after spousal rape criminalisation in UK (1991) and several other countries including Australia (1976), Canada (1983), South Africa (1993), and USA (1993). However, Lerner’s words are still everyday reality for Indian lawyers who continue to struggle with explaining marital rape victims as to why a country supporting abortion rights to guarantee female autonomy, pulls back on this guarantee as soon as demand of criminalising marital rape is put forth. Duality of such partial guarantee of female autonomy raises following questions – Why does marital rape still exist without criminal justice recourse in India? Whether arguments against its criminalisation are legitimate?

Paper explores Indian criminal jurisprudence around marital rape, alongwith need, relevance, and practicality of criminalisation of spousal rape in India, while examining sufficiency of available civil remedies. Further, considering difficulty of proving absence of consent in marital rape cases, paper focuses on kind of forensic evidences that can be used to aid complainants’ claims in such cases, and discusses admissibility and evidentiary value of such forensic evidence. Consequently, paper analyses onus of proof in cases of marital rape, and the need for acknowledgement that a husband can commit rape on his wife, express consent, and proposing introduction of marital rape as a ground for divorce.

Keywords: marital rape, forensic evidence, consent, female autonomy, criminal jurisprudence



FORENSIC DNA PROFILING AND HUMAN RIGHTS OF RAPE VICTIMS ON MEDICAL EXAMINATION IN INDIA: A CRITICAL ANALYSIS

Dinesh Kumar Singh*

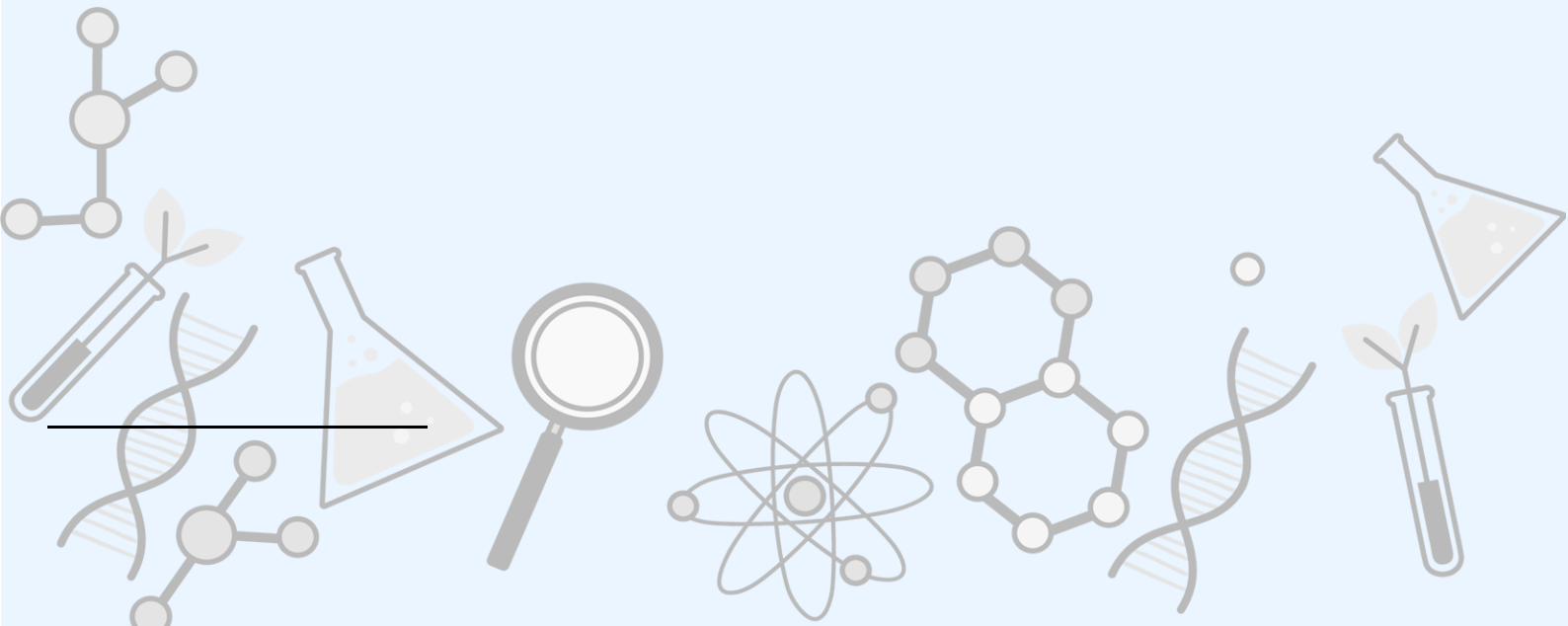
Assistant Professor, Bennett University (The Times Group)

Abstract:

The crime of rape is by nature inhuman and suppressive and against her free will and personal liberty. It violates the fundamental right of dignified life which is guaranteed globally and the fundamental law of the land. The speed and pace of crime are directly proportionate to the effectiveness of the criminal justice administration. If criminals are walking free after crime in society and the law is ineffective to bring them behind the jail with strong criminal justice administration by scientific tools and techniques of investigation. When rape is committed the responsibility began of the state is to give justice to the victim with the help of its institution would definitely. Medical examination of a rape victim after the crime plays a great role in convicting or acquitting the accused. This work is focused on the importance of medical examination and the collaborative role of forensic science-based DNA profiling in the criminal investigation of rape crimes.

Keywords: Rape victim, Medical Examination, Women dignity, Criminal Investigation, Forensic Sample. DNA Profiling.

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COMPARATIVE ANALYSIS OF SVM VARIANTS FOR GST FRAUD DETECTION: UNVEILING THE MOST EFFECTIVE APPROACH

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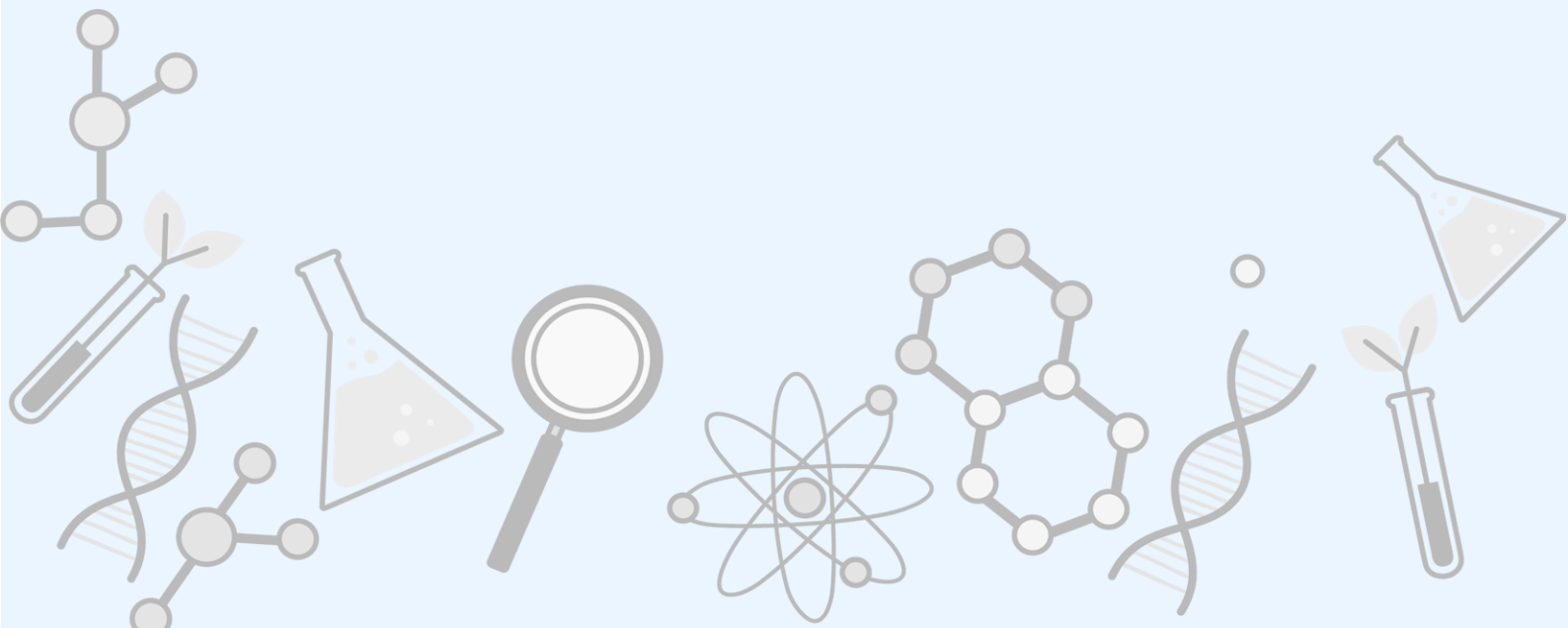
²Assistant Professor, School of Management Studies, National Forensic Sciences University,

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Abstract:

This study explores various Support Vector Machine (SVM) variants and provides an analytical comparison to identify their effectiveness in detecting Goods and Services Tax (GST) fraud. GST fraud poses significant challenges to regulatory authorities and businesses, necessitating robust detection methods. SVM, a powerful machine learning algorithm, offers promise in this domain due to its ability to handle complex data and nonlinear relationships. Through a comprehensive examination of SVM variants, including linear SVM, polynomial SVM, and radial basis function SVM, this study assesses their performance in GST fraud detection. Additionally, computational efficiency and scalability are investigated to gauge the practical viability of each variant. The findings contribute to advancing the understanding of SVM's applicability in fraud detection contexts and offer insights into selecting the most suitable variant for GST fraud identification. Ultimately, this research aids stakeholders, including tax authorities and businesses, in implementing effective strategies to combat fraudulent activities and uphold fiscal integrity.

Keywords: Support Vector Machines (SVM), GST fraud, Input Tax Credit



AWARENESS LEVELS OF INVESTORS ON SHARE MARKET: A STUDY WITH REFERENCE TO SELF HELP GROUPS IN ANANTAPUR DISTRICT OF ANDHRA PRADESH

M. Pushpavathi¹, Prof. S. Raghunatha Reddy²

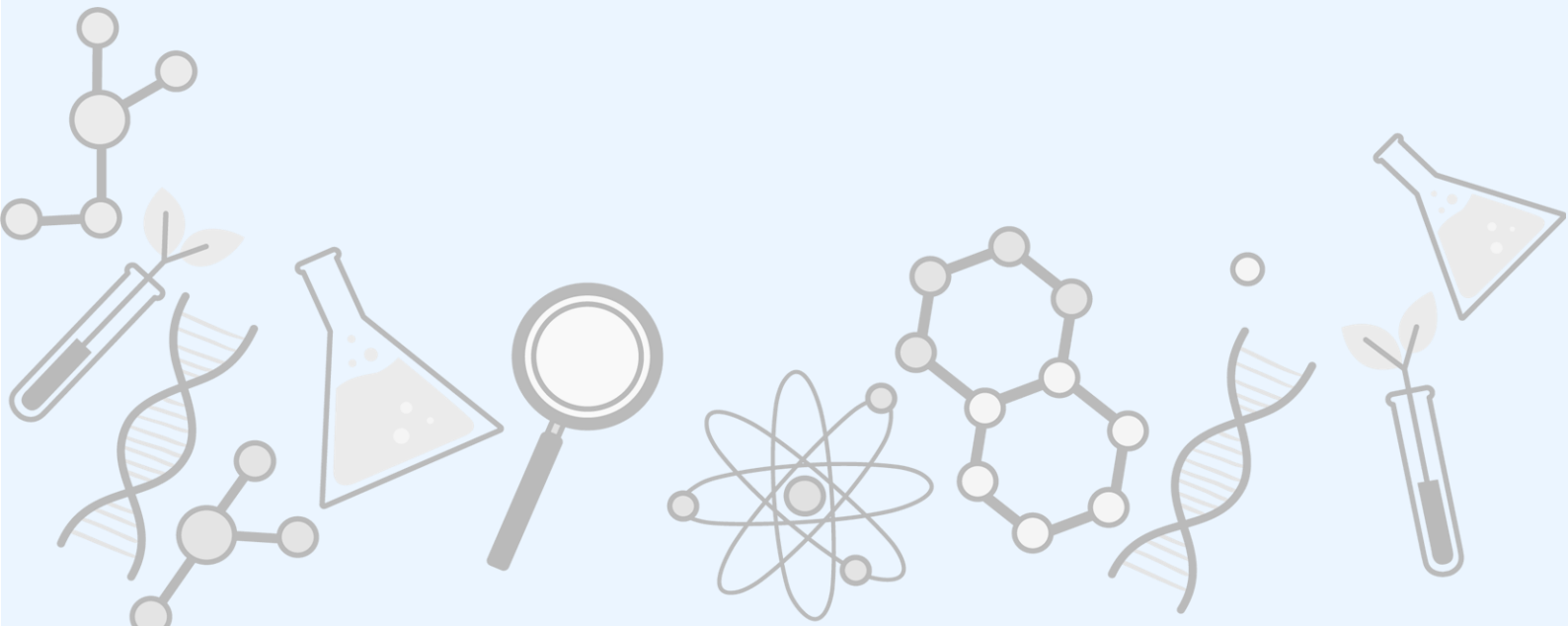
Research Scholar, Dept. of Commerce, Yogi Vemana University, Kadapa

Faculty, K.H.GDC, Dharmavaram

Abstract:

A study of investors awareness levels includes not only knowing the knowledge of various financial products available in the market but also facilitates decision making, particularly among the less educated as well as of those who committed to long-term financial decision. The Self-help groups (SHGs) are the people who are less educated and committed to long term financial decision. They have become important in helping people in semi-urban and rural areas of Andhra Pradesh. The study focuses on to understand the investment awareness levels among self-help groups in Anantapur district, to study the investment alternatives that women typically prefer, to analyze the role of women in making investment decisions. The data has been collected from primary and secondary sources. The primary data was collected by using convenient sampling method from 153 sample respondents of SHG in Anantapur district of Andhra Pradesh with the help of well-structured questionnaire. The secondary data was gathered from various journals, magazines and internet sources. The study suggests that there is a need to boost interest and confidence among SHGs and it is essential to raise awareness and offer educational programs on share market among the self-help group members.

Keywords: Self-help groups, Savings, Investment, share market, Financial independence.



PSYCHOMETRIC PROFILING OF PSYCHOSOCIAL FACTORS AMONG LARCENY OFFENDERS IN INDIA

Vismita Paliwal*, Ashish Kumar Shukla**

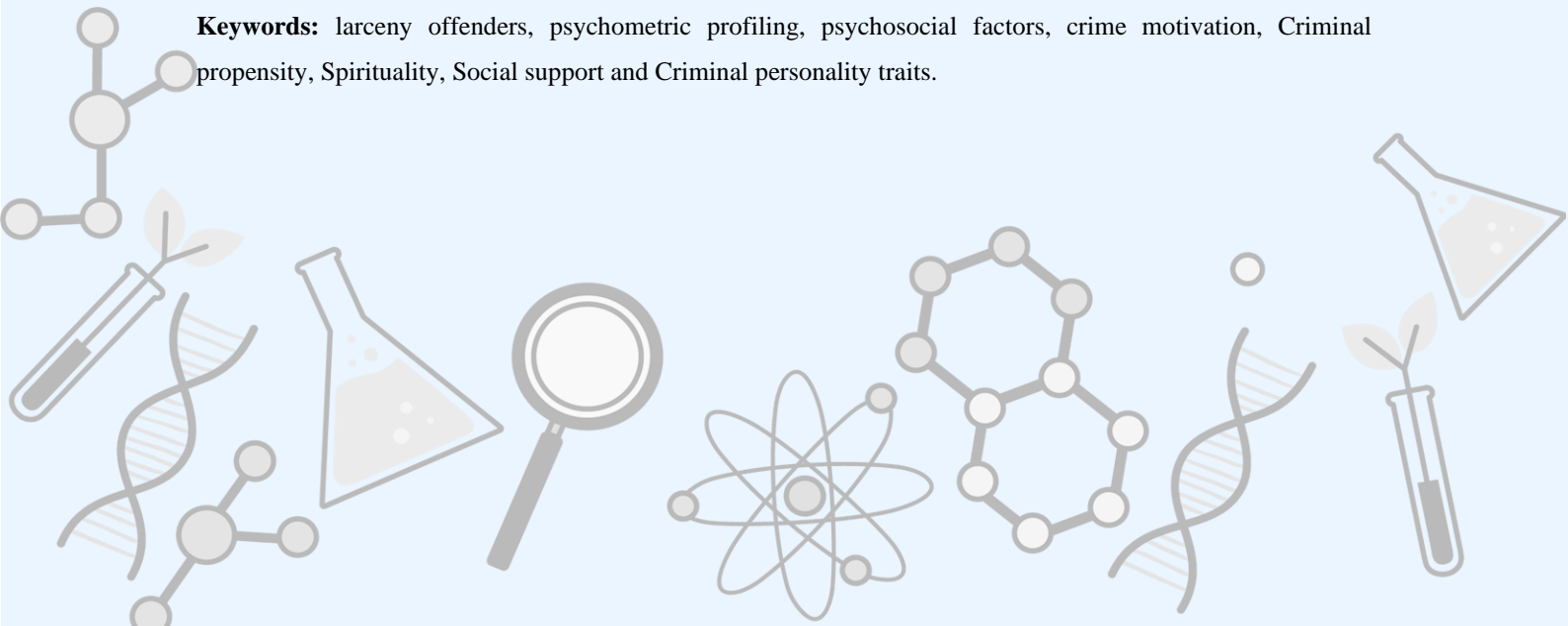
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** Assistant Professor, Department of Law, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur,
Uttar Pradesh.

Abstract:

Psychometric profiling of psychosocial factors is the practice of drawing conclusions about the likely offender's personality and other traits based on the circumstances of a crime. The fundamental psychological assumption behind profiling is to establish a link between the perpetrators' activities at the scene of the crime and who they are. Recent studies have focused on general conclusions drawn from longitudinal studies, generalizations about cross-situational consistency, and observations about the evolution of criminal behavior. The purpose of the study was to investigate the modus operandi, underlying motives and the criminal propensity of the larceny offenders on hypothesizing different levels and contributing factors responsible for committing larceny. The sample of 50 larceny offenders was collected from Central prisons of Gujarat, Chhattisgarh, and Rajasthan districts of India with the help of convenient sampling technique. The offenders were administered on Offending Motivation Questionnaire (Gudjonsson & Sigurdsson, 2004), Vedic Personality Scale (Wolf, 1998), Social Support Scale (Dhull & Godara, 2016), Criminal Propensity Scale (Singh and Sharma, 2017) and Spiritual Health Scale (Qayoom and Husain, 2018). The quantitative method opted for the current study is thematic interview method. The results indicated that the offenders possessed significantly high level of criminal propensity and motivation to commit the crime, the vedic personality observed was more towards tamo guna (indicating high tendency of laziness, sleep, darkness and destruction). Decreased level of social support and spiritual health was observed. It was concluded that in order to improve the accuracy and utility of these models in actual investigations, these domains may be also be utilized. Using this relatively new investigative method can help Police investigators to prioritize and narrow down a pool of potential suspects by relating an offender's behavior at the site of the crime to their most likely traits.

Keywords: larceny offenders, psychometric profiling, psychosocial factors, crime motivation, Criminal propensity, Spirituality, Social support and Criminal personality traits.



FORENSIC EVIDENCE VIS A VIS CRIMINAL JUSTICE SYSTEM

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Dr. Inderpreet Kaur Narang

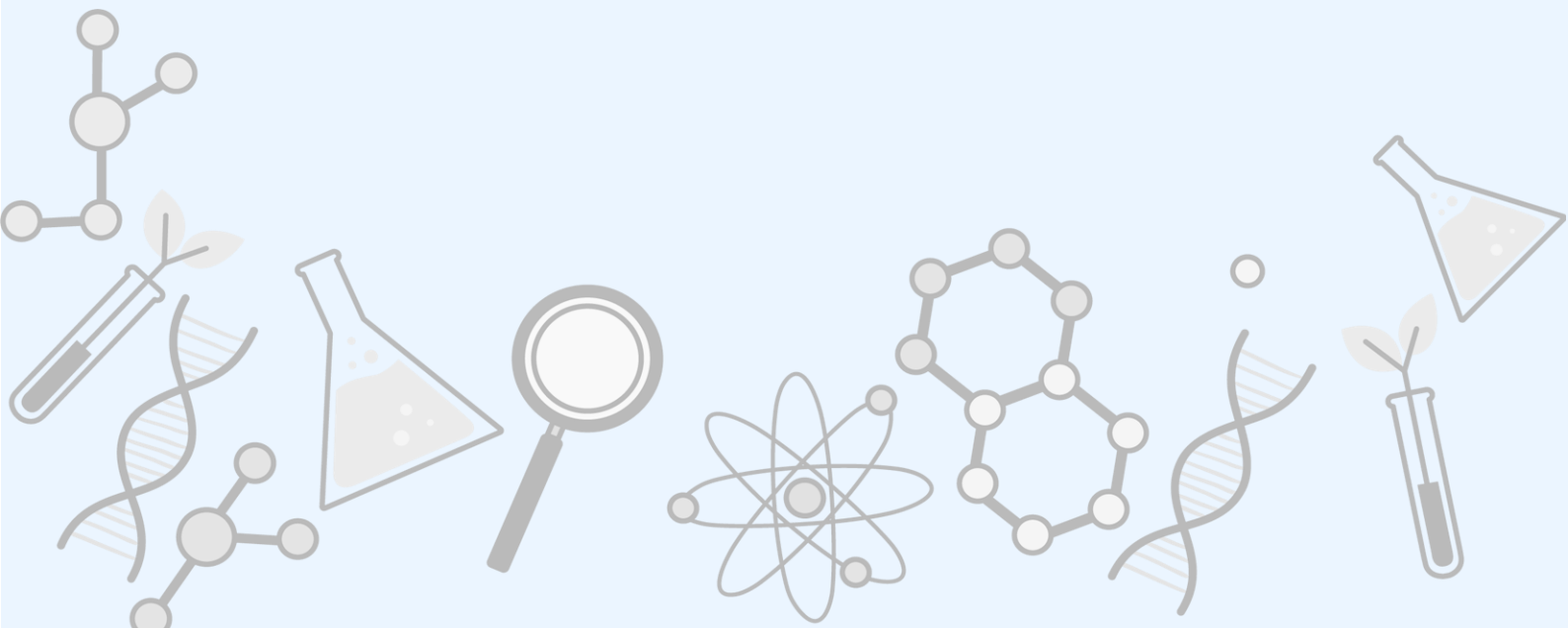
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Abstract:

Forensic evidences are one of the highly reliable sources of evidences these days, especially in the criminal justice system. The usage of scientific techniques to gather information on collected evidences to prove or disapprove the ascertained facts highly contributes to a speedy and an efficient justice delivery system. There are numerous cases where forensic science is highly helpful in finding out evidences to remove the suspects and convict the real culprit. Crimes like sexual offences and homicides are certainly the ones which require forensics to help identifying necessary information to be presented in court of law. This study discusses about the popular forensic techniques, relevant forensic evidences and legal provisions governing admissibility of such evidences. Some landmark cases will also be discussed. Towards the end, a study will be made about the significance of forensic evidences in criminal justice system.

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UNVEILING ADRENAL RESPONSES TO THERMAL TRAUMA: HISTOPATHOLOGICAL INSIGHTS AND PREDICTIVE MODELLING IN BURN VICTIMS

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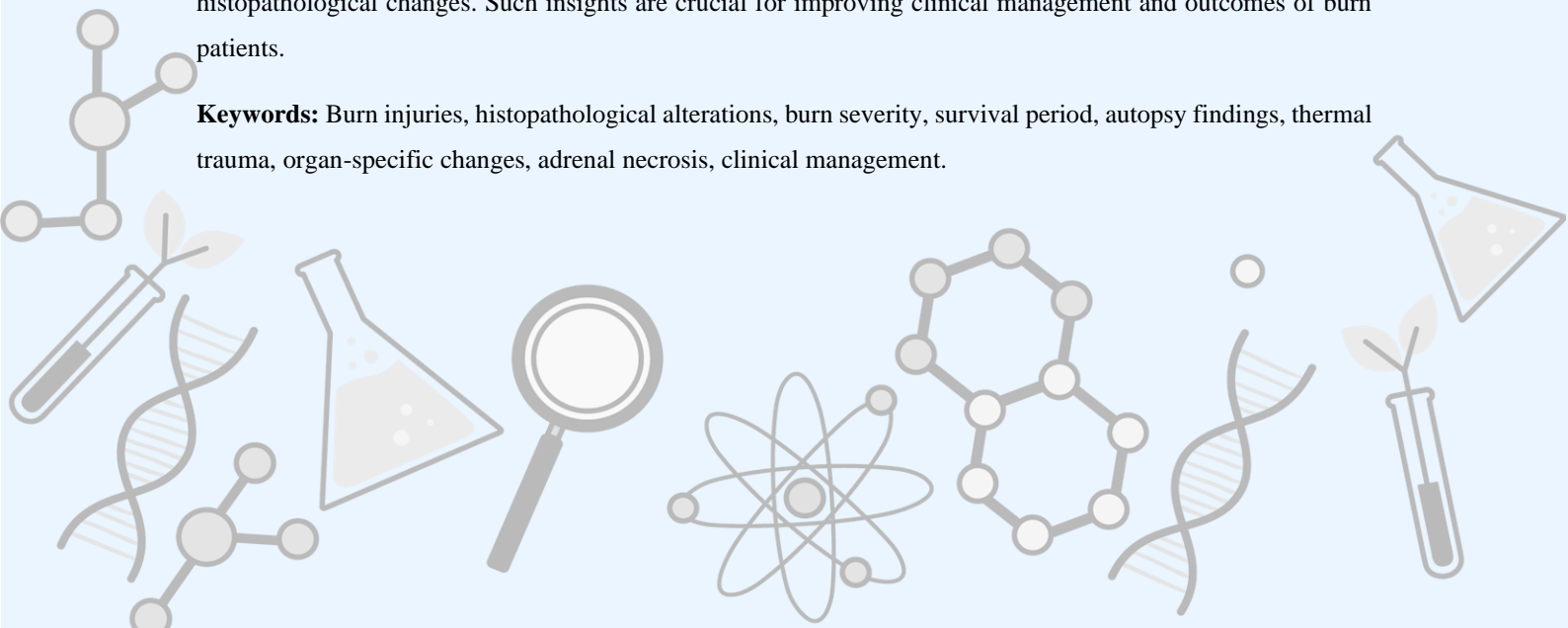
³ Consultant, Professor & Head, Forensic Medicine & Toxicology, Safdarjung Hospital & Vardhman Mahavir Medical College, New Delhi.

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Abstract:

Burn injuries constitute a significant public health concern, causing substantial morbidity and mortality globally. Despite advancements in medical care, burns continue to exert a considerable burden on healthcare systems, earning them the designation of a "silent epidemic." This study aimed to investigate the histopathological alterations in adrenal glands following burn injuries and correlate them with burn severity and survival periods. We conducted autopsies on 200 deceased burn victims, excluding those with chronic diseases and decomposed bodies. Gross and histopathological examinations were performed on the adrenal glands, focusing on changes like congestion, haemorrhage, necrosis, and cortical alterations. Our findings revealed a significant association between the severity of burns and histopathological changes in adrenals, particularly with congestion ($p=0.012$). While necrosis was observed in 52.1% of cases, it was not significantly associated with burn percentage but correlated with burn depth ($p=0.014$). However, no significant correlation was found between adrenal necrosis, burn percentage, survival period, and other histopathological changes. Regression equations were formulated to predict adrenal weight and the likelihood of developing adrenal necrosis based on autopsy findings. These findings shed light on the microscopic pathophysiological processes triggered by thermal trauma and underscore the need for further research to elucidate the complex interplay between burn severity and organ-specific histopathological changes. Such insights are crucial for improving clinical management and outcomes of burn patients.

Keywords: Burn injuries, histopathological alterations, burn severity, survival period, autopsy findings, thermal trauma, organ-specific changes, adrenal necrosis, clinical management.



METAGENOMICS AND STATISTICAL ANALYSIS OF HUMAN MICROBIOME IN SUCCESSFUL LIVE BIRTHS

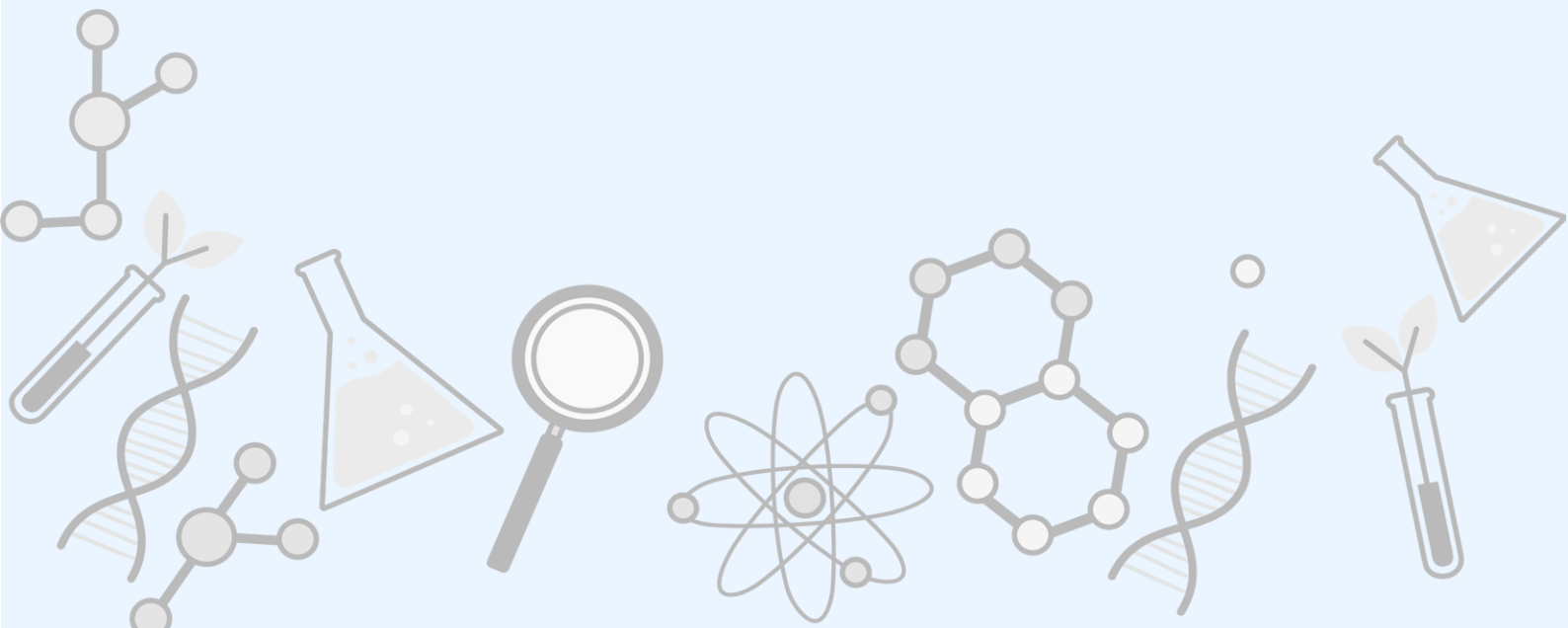
Raj Tripathi¹, Abhishek Sengupta¹

¹Amity Institute of Biotechnology, AUUP Noida

Abstract

The human microbiome, comprising trillions of microorganisms inhabiting various niches within the body, has emerged as a key determinant of health and disease. Among its diverse roles, the microbiome's influence on pregnancy outcomes has garnered significant attention due to its potential implications for maternal and neonatal health. Here we present an integrated analysis pipeline tailored to elucidate the complex relationship between the human microbiome and successful live births. Leveraging data from PubMed articles encompassing keywords such as human microbiome, vaginal microbiome, microbiome and pregnancy, placenta, and microbiome, we curated a comprehensive dataset comprising PubMed IDs, author details, titles, and abstracts. Through taxonomic classification of 16S rRNA raw sequence data using Parallel-META 3 with Greengenes and SILVA databases, we dissected the microbial taxonomy across different sample cohorts, shedding light on microbial community dynamics during pregnancy. Furthermore, functional profiling elucidated the molecular functions and metabolic pathways enriched in microbial communities associated with successful live births, providing insights into potential mechanisms underlying reproductive health. Employing advanced statistical analyses, including PERMANOVA and ANCOM-BC, we identified significant variations in microbiome composition and discerned microbial biomarkers indicative of favourable pregnancy outcomes. Visualization techniques such as bar charts, circular bar charts, and phylogenetic trees were deployed to illustrate the abundance and distribution of microbial taxa across diverse sample groups. Overall, our integrated approach not only advances our understanding of the human microbiome's role in pregnancy but also underscores the potential of microbial biomarkers as predictive tools for reproductive health monitoring and intervention strategies.

Keywords: Human microbiome, Vaginal microbiome, Pregnancy, Placental microbiome, Functional profiling, Reproductive health, Microbial biomarkers.

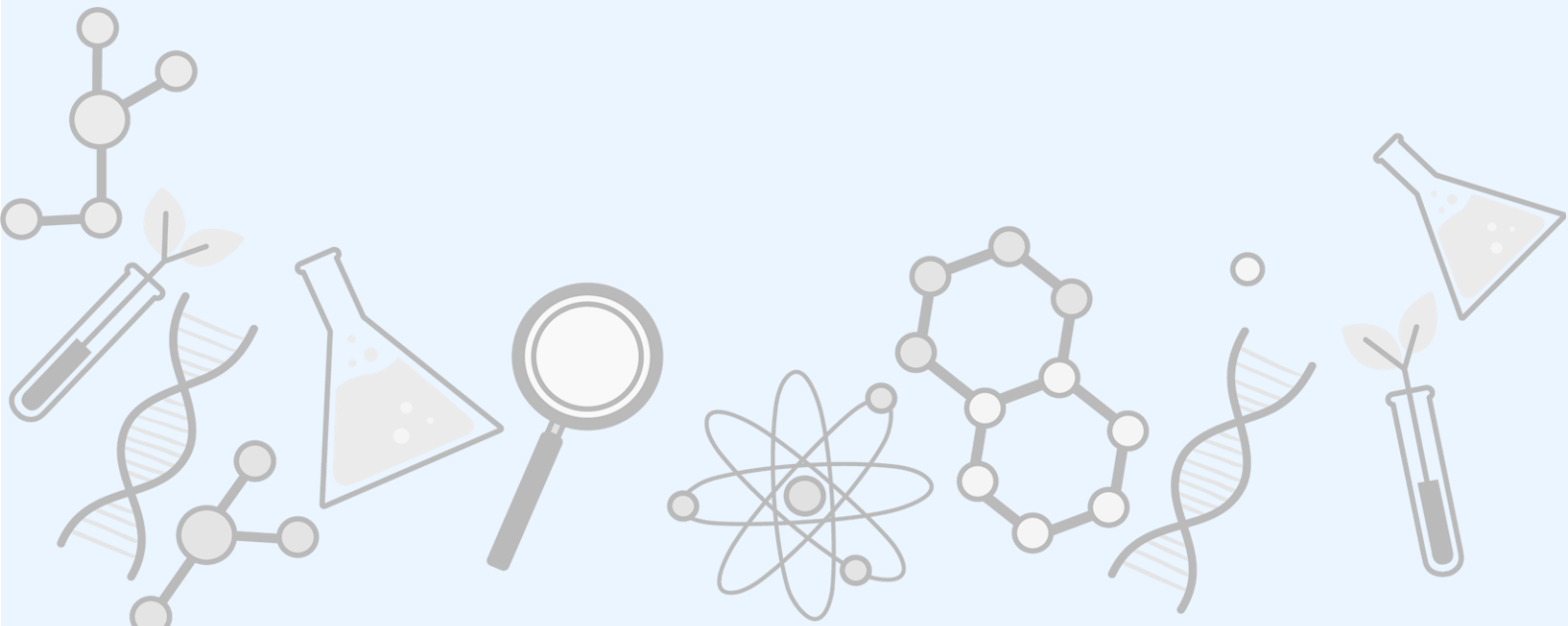




POSTER PRESENTATIONS

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UNVEILING AGE THROUGH TEETH: FROM TRADITIONAL TO AI-DRIVEN DENTAL AGE ESTIMATION

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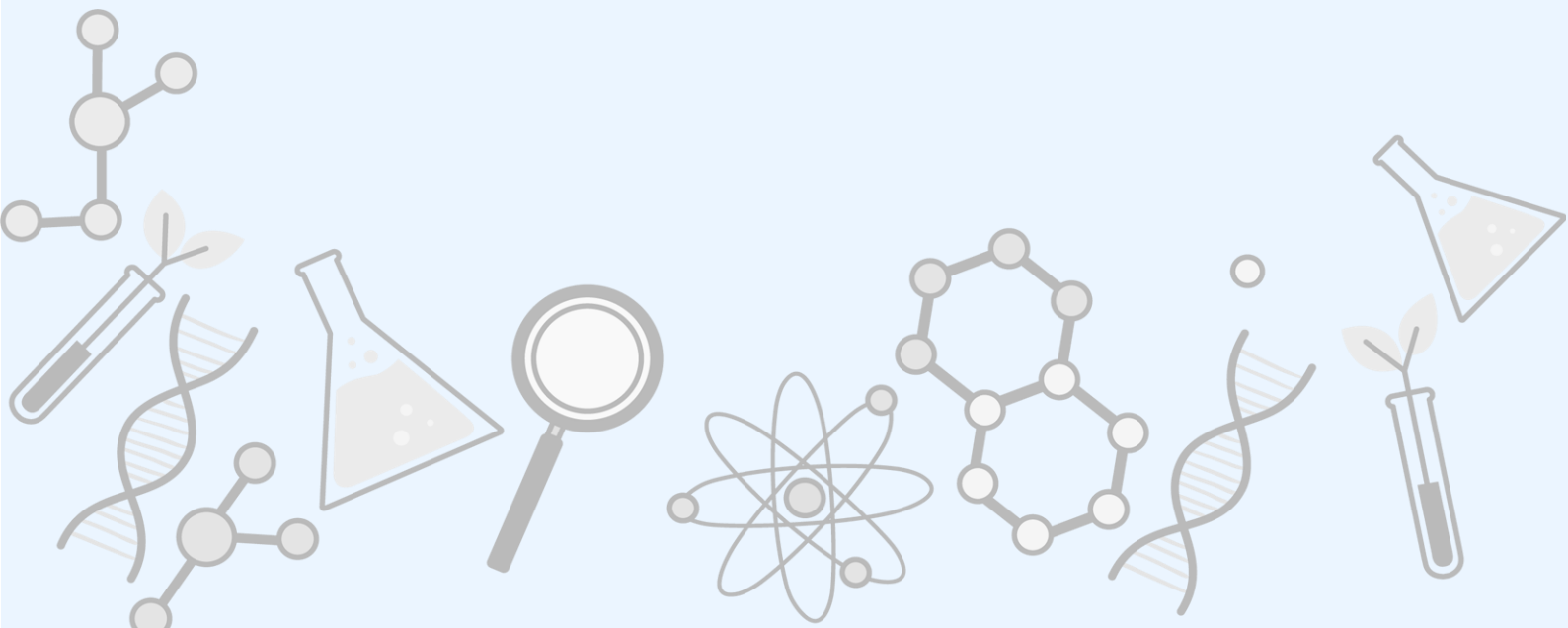
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Abstract:

Dental age evaluation is crucial for age-sensitive treatment therapies, orthodontic planning, and legal investigations. Many techniques exist for estimating age based on biometric features such as the voice, teeth, bones, and face. Teeth are quite useful as they are resilient and long-lasting, and they undergo many alterations from infancy to adulthood that can be utilized to determine age. Methods for calculating dental age fall into three categories: radiographic, biochemical, and morphological. Since radiological techniques are repeatable and non-invasive, they are frequently employed. When radiographs are available, dental age can be computed by measuring the distance between specific landmarks, such as the tooth, root, or pulp, and then entering that measurement into regression formulas. Alternatively, the developmental stage of permanent teeth can be evaluated and converted into an estimated age using a table. Both human perception-based and machine-based age group estimation algorithms have been documented in the literature, indicating that this is an area of ongoing research. There still isn't a conclusive and efficient way to determine age groups for all ages, despite great progress and a wealth of study in related fields. This field of study needs further research and improvement because age estimates are becoming increasingly important. Traditional procedures rely on manual measurement and visual examination, they are susceptible to subjectivity and variability among observers. Although traditional approaches based on tooth development are reliable, they can be improved by utilising deep learning, particularly neural networks, given the rapid advancement of artificial intelligence (AI) technologies.

Keywords: Dental Age estimation, Forensic odontology, Traditional methods, Panoramic radiography, Artificial Intelligence.



CRIMINAL PROFILING

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Lovely Professional University, Forensic science

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Abstract:

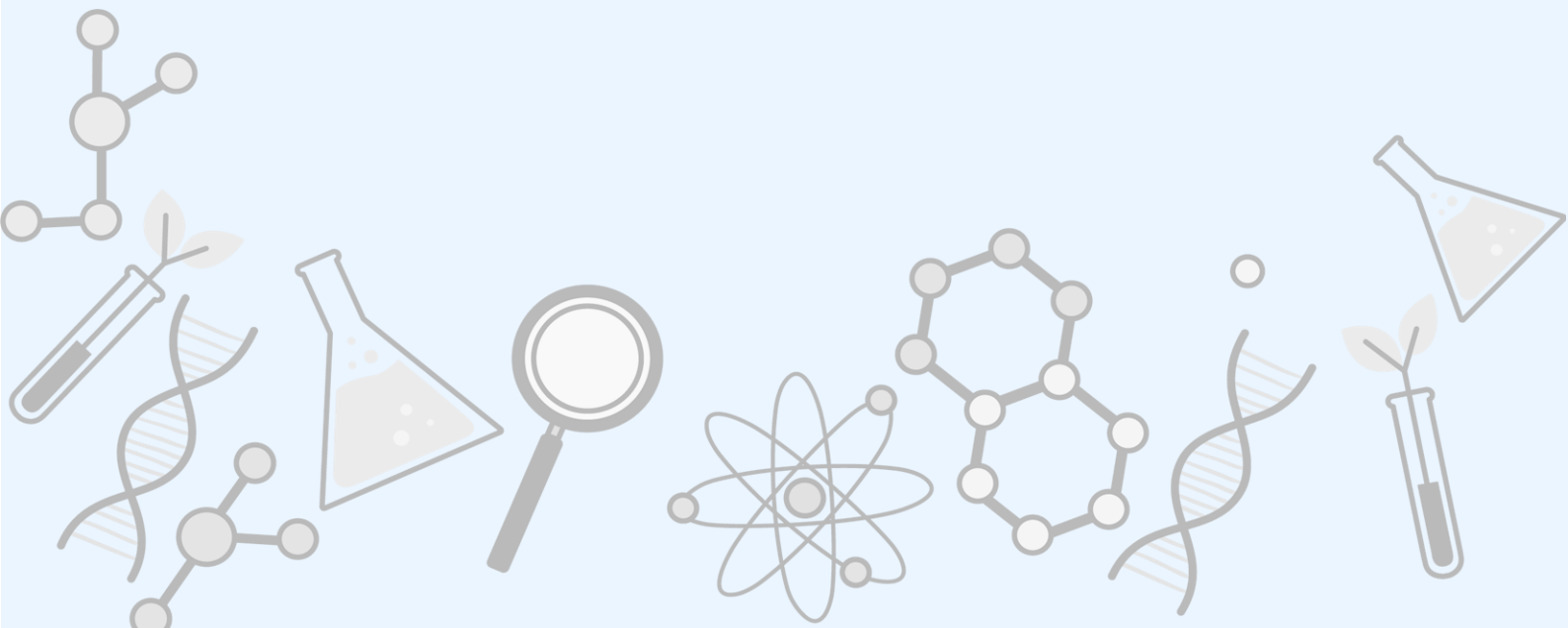
Criminal profiling is a forensic technique which predicts offender's personality patterns, behaviors and demographic characteristics.

This technique is the user an insight into a better understanding of the perpetrator's characteristics

The process of criminal profiling generally involves: Evaluating the criminal act (1) Evaluating the crime scene (2) Analyzing the victim (3) Evaluating the FIR (4) Evaluating the examiner's autopsy protocol (5)

Criminal profiling is vitally used in the process of the crime investigation. It is particularly useful in hostage negotiation, identification of writers of threatening letters, rapists, arsonists and sexual murderers. In Criminal Justice System this is technique mostly used in the assessment of the offenders of heinous crimes like rape, murder, sexual homicides, etc. In this context types of profiling their importance and role in the law enforcement in India are discussed. Criminal profiling also the pattern of understanding and analyzing the criminal behavior in the cases which are being investigation.

Criminal profiling can help identify: The victim's choice (1) The manner, time and location of time (2) Type of Crime (3) The agenda of the crime (4). The Criminal profiling does not mean that it will identify who is a suspect, rather it only says that they may be a suspect. Criminal profiling involves making decisions about he physical, mental, psychological and emotional behavior of the suspected criminals- to know their knowledge, skills and abilities of them.



ROLE OF FORENSIC DENTISTRY IN SEXUAL DIMORPHISM THROUGH MORPHOMETRIC STUDY OF MANDIBULAR CANINE

Mamta¹, PR. Mondal*

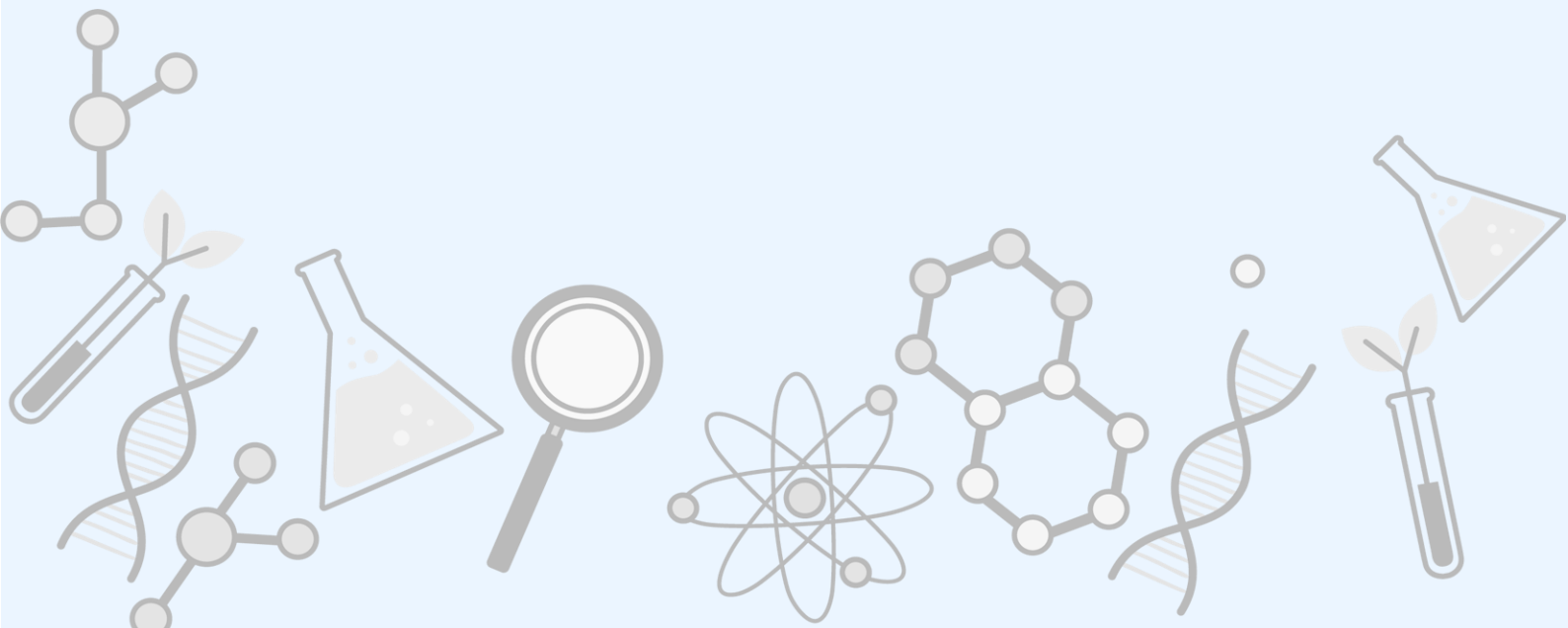
Ph.D. Scholar¹, Professor*

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Abstract:

Forensic odontology is the discipline of establishing identity by teeth, and it has played a critical role in identifying victims of massive disasters. Teeth are an excellent tool for identification because they are resistant to fire and bacterial decay. Sexual dimorphism is one of the key elements of forensic investigation. Mandibular canines are the best resources for forensic investigations to assess sex because they have a higher chance of surviving all types of disasters. The mandibular canines are the most sexually dimorphic of all teeth. As a result, this study had the objective to assess the efficacy of the mandibular canine in determining sex. Sexual dimorphism is one of the key elements of forensic investigation. Mandibular canines are the best resources for forensic investigations to assess sex because they have a higher chance of surviving all types of disasters. This study studied sexual dimorphism in the Delhi population by comparing the mesiodistal width and intercanine distance of mandibular permanent canines on study cast models with the help of a Digital Vernier Caliper. The mean mesiodistal widths (left and right) and intercanine mandibular canines in males were higher as compared to females. The p-values were less than 0.001, indicating highly significant comparison statistics. The right mandibular canine exhibited more sexual dimorphism (11%), compared to the left mandibular canine (10%). The present study demonstrates a distinct and statistically significant sexual dimorphism in mandibular canines. The criteria evaluated in the present study are very helpful for sex identification during forensic examinations.



A COMPARATIVE STUDY OF LATENT FINGERPRINT DEVELOPMENT VIA PHYSICAL METHOD ON MONEY PLANT (*Epipremnum aureum*) LEAVES

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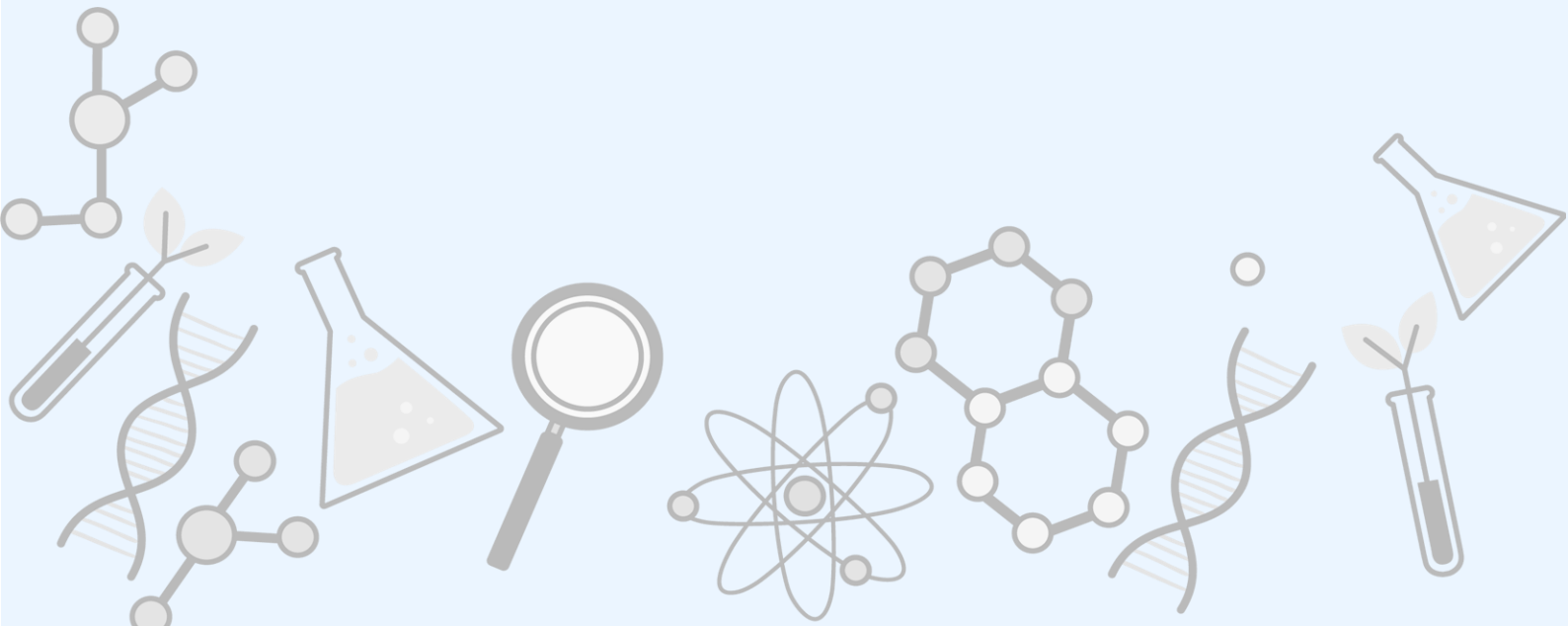
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Abstract:

Forensic botany, a subfield of environmental forensics, concentrates on the usage of plants. Forensic botany is still an underutilised resource in forensic investigations. It is a field of speciality science that may incorporate traditional botanical species categorization, DNA or materials evidence (trace and transfer evidence), crime mapping, or geo-sourcing, depending on the unique case application under consideration. Forensic botany is a vast topic that encompasses several areas of plant science, focusing on taxonomy, field botany, anatomy, and ecology. Expanding the application of forensic botany in criminal investigations, notably in cases of war crimes, homicide, sexual assault, major physical assault, illegal trade in endangered species, and wildlife crime, provides a tremendous opportunity on a global scale. The use of plant anatomy as a forensic technique in criminal investigations can be significant. Forensic botany must include the study of these fragments as well as the interpretation of the data. This study aims to illustrate the value of forensic botany at crime scenes. Black Powder and Fluorescent Orange Powder will be used to produce latent fingerprints on Money plant leaves based on predetermined inclusion criteria. The study's conclusion suggests that black powder, which is commonly available, non-toxic, and simple, can be successfully applied to the leaves of money plants to make prints in criminal investigations, offering higher visibility of ridges than fluorescent ones in the field of forensic sciences. Plant evidence can be utilised to assess if a crime scene is primary or secondary, as well as to find missing bodies.

Keywords: Forensic Botany, Money Plant Leaves, Forensic Science, Powder Methods, Fingerprints



FROM INK TO SCREEN: A STUDY OF TYPES OF SUICIDE NOTE

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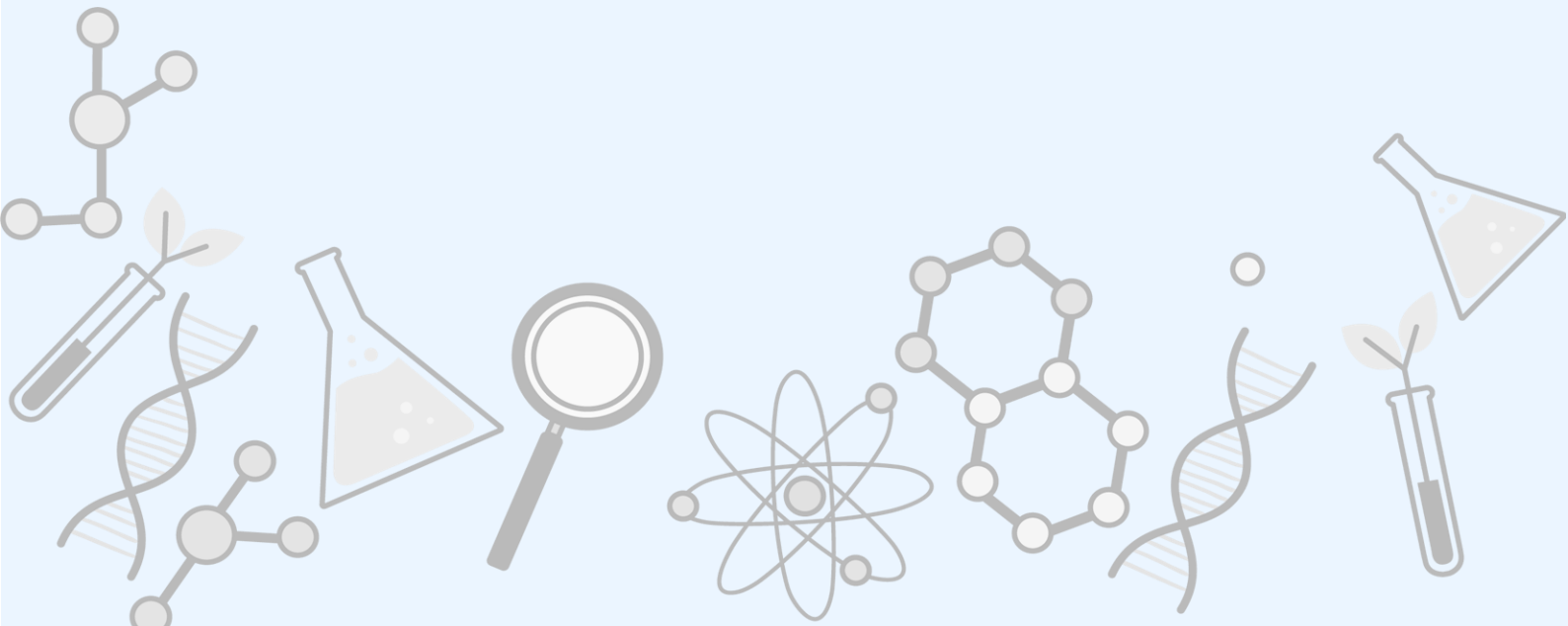
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Abstract:

Suicide notes offer a valuable insight into the minds of individuals contemplating suicide. This study delves into the evolving landscape of suicide note formats, focusing on the transition from traditional handwritten notes to electronic formats in the digital age. Analyzing a dataset of completed suicide cases, we found a significant shift towards electronic suicide notes, accounting for 55.55% of cases compared to 44.44% handwritten notes. The study further categorizes electronic notes into various types, shedding light on the diverse platforms individuals choose for their final messages. By exploring this shift in communication methods, our research aims to deepen understanding of the contemporary trends in suicide notes and their implications.

Keywords: Suicide note, Suicide Communication, Electronic Suicide Notes, Online End-of-Life Messages, Digital Farewells.

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COMPARATIVE POTENTIAL OF DIFFERENT INSTRUMENTAL TECHNIQUES FOR DETECTING PESTICIDES IN FORENSIC INVESTIGATIONS

Shaesta Shahid¹, Suramya¹, Shahzad Ahmad¹, Sheikh. Raisuddin*¹

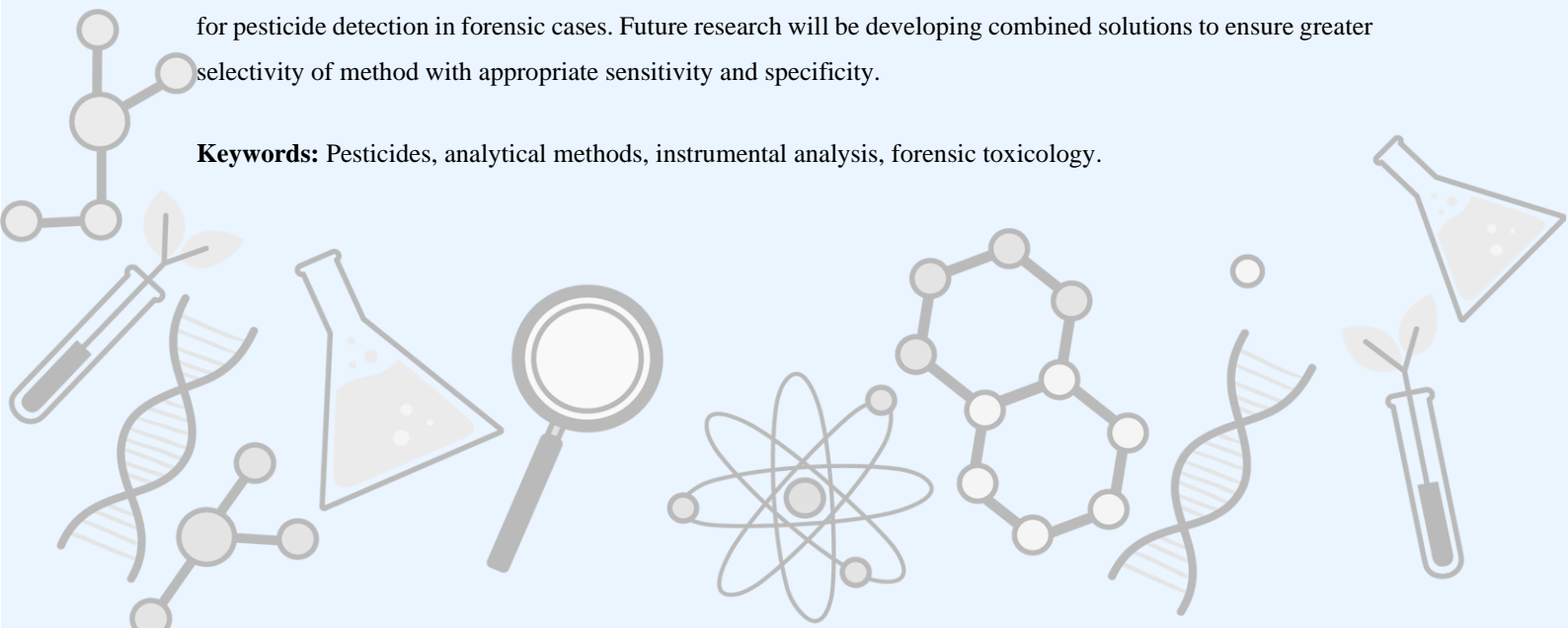
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Abstract:

Pesticides are important analytes in toxicological cases, associated mostly with acute doses, pesticides are implicated in suicide, homicide, and accidental poisonings in clinical and forensic toxicology. The development of techniques for the detection of pesticides and their metabolites is an important task for forensic laboratories. In postmortem cases of pesticide poisoning, forensic examination faces particular challenges such as low concentrations, identification of metabolites, interference of endogenous and exogenous compounds, sample matrix effects etc. The accurate determination of pesticides in a biological sample is of key importance for the identification of the source of death. This presentation reports comparison of various analytical methods employed for the detection of different classes of pesticides in various postmortem biological matrices including spectroscopic techniques (UV-Vis, vibrational spectroscopy), chromatography (HPTLC, HPLC, GC), hyphenated techniques (GC-MS, LC-MS), immunodiagnosics (ELISA, biosensors). These instrumental techniques are documented for the successful use in forensic toxicology. The evaluation criteria includes sensitivity, selectivity, robustness, implementation cost and duration. GC-MS and LC-MS were the most common choice for the laboratories for a very long time, but development and validation of more efficient techniques have altered the landscape recently. Furthermore, the specific condition of various instrumental methods was also compared for better understanding of suitability of particular method. Knowledge learned from comparing particular pesticides to their respective analytical methods helps to choose best technique with specific conditions for pesticide detection in forensic cases. Future research will be developing combined solutions to ensure greater selectivity of method with appropriate sensitivity and specificity.

Keywords: Pesticides, analytical methods, instrumental analysis, forensic toxicology.



COMPARATIVE STUDY OF EXTRACTION METHODS FOR CARBAMAZEPINE IN URINE SAMPLE

Shrutika Singla¹, Riya Rai¹, Jyoti Singh²

¹Research Scholar, Amity Institute of Forensic Sciences, Amity University Uttar Pradesh, Noida

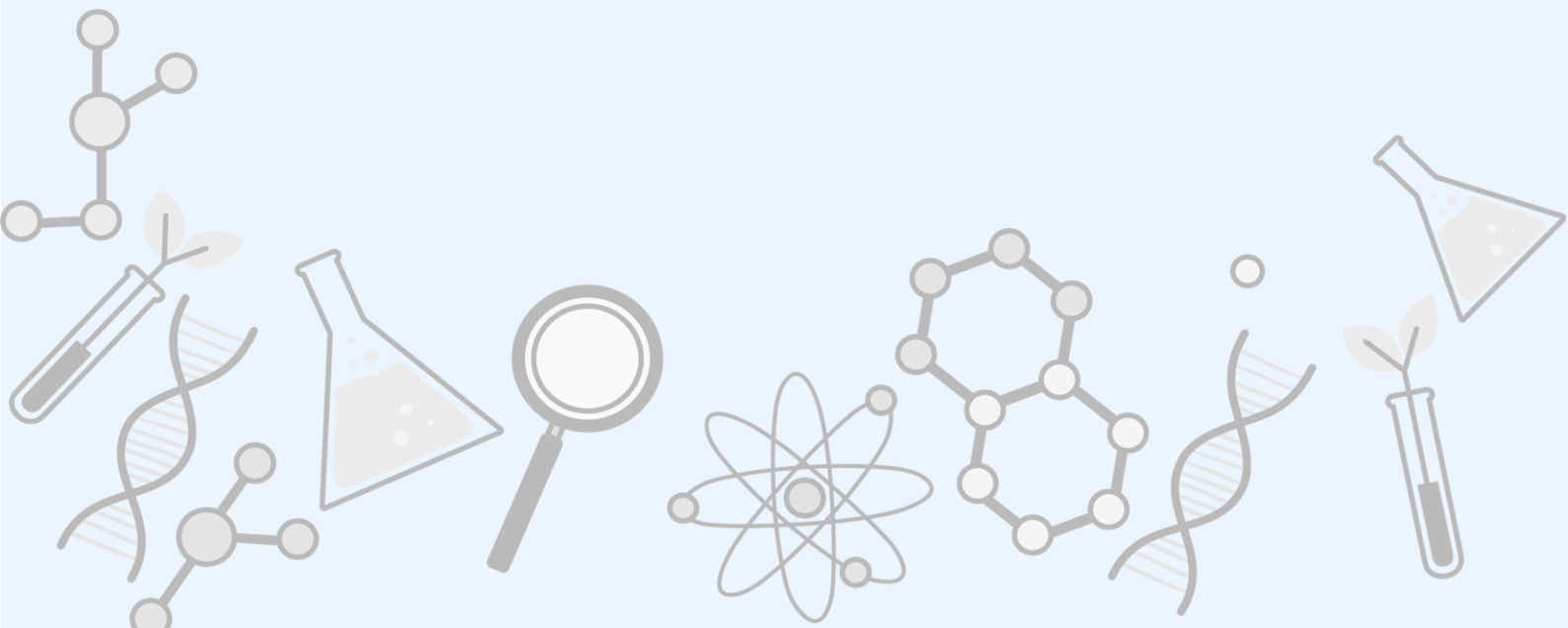
²Assistant Professor, Amity Institute of Forensic Sciences, Amity University Uttar Pradesh, Noida

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Abstract:

Carbamazepine (CBZ), an anti-convulsant drug is given for the treatment of epilepsy or seizures and other neurological disorders such as bipolar disorder, trigeminal neuralgia, ADHD, etc. The cases of Carbamazepine toxicity have been increasing since 2000s according to the reports of American Association of Poison Control Centre. CBZ was found to be included in single drug poisoning cases as well as multi-drug poisoning cases which makes it crucial to quantify the amount of drug responsible for causing toxicity in an individual. Many methods have been developed for extraction of Carbamazepine including SPE, LLE, SPME, PPE, etc from various biological matrices such as blood, plasma, urine, saliva, viscera and many more. This paper gives a comparative study of two extraction methods- Microextraction Packed Sorbent (MEPS) assay and Dispersive Liquid- Liquid Microextraction (DLLME) method to isolate carbamazepine from urine sample and its quantification using LC-MS/MS. The linear regression analysis was done for 6 different concentrations ranging from 5 µg/mL to 200 µg/mL. LOD and LOQ obtained for the drug using MEPS extraction method was found to be 16.14 mg/mL and 48.90909 mg/mL with value of coefficient of regression (r^2) > 0.998 and using DLLME for extraction, it was found to be 10.46007 mg/mL and 31.69718 mg/mL with r^2 > 0.999. For the validation of the developed methods, International Conference on Harmonisation of Technical Requirements for registration of Pharmaceuticals Use Guidelines have been followed in terms of robustness, accuracy, precision, specificity, recovery and repeatability.

Keywords: Carbamazepine, Anti-convulsant drug, Comparison, Epilepsy, Anti-epileptic drug



EXPLORING LEGAL DIMENSIONS IN MEDICO-LEGAL CASES : A STUDY IN SEXUAL JURISPRUDENCE EXPLORING LEGAL DIMENSIONS IN MEDICO-LEGAL CASES : A STUDY IN SEXUAL JURISPRUDENCE – FORENSIC GYNAECOLOGY

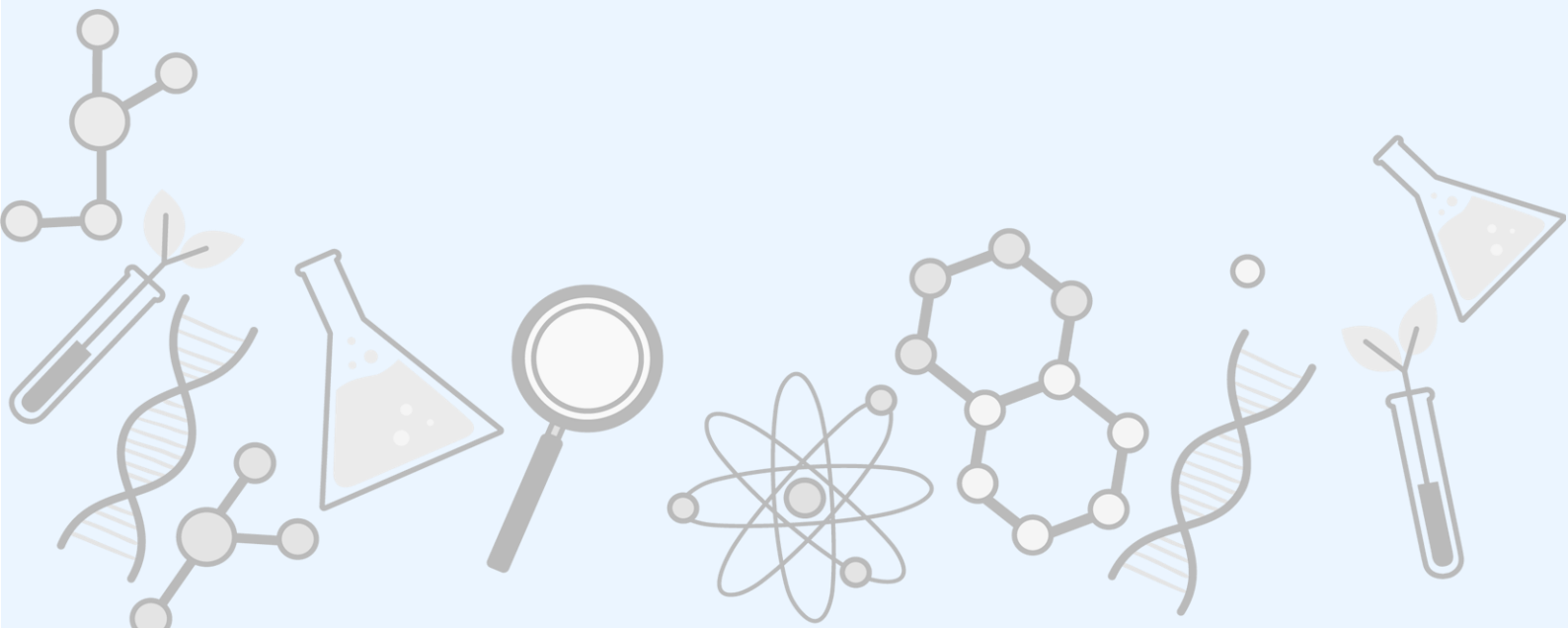
Sunita Paudel

Lovely Professional University Address : Jalandhar-Delhi , GT RD ,Phagwara ,Punjab – 144001

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Abstract:

Medico – legal case is a case where the attending doctor examine a patient and make their whole history and after going through the reports they come to the conclusion that the case need to be registered legally and the case need to be handled by law enforcement. Various types of cases handled are: All cases of burns & injuries , Suspected or evident criminal abortion , Suspected or evident rape, Cases of unconsciousness , etc. The study is done under Forensic Medicine and Forensic Toxicology . Sexual Jurisprudence is a branch of medico-legal cases where the examination of virginity , impotency , sterility , abortion , and various types of sexual offenses and sexual perversions is studied . Sexual Jurisprudence consists of rape and unnatural sexual offenses such as sodomy , buccal coitus , and bestiality . Preamble of following things need to be done : Authorization letter , Female attendant , detail about the examinee , Consent for examination . Many complications are faced while examination of consent as many of the complications arise i.e. semen absence , suicidal tendency , depression . According to the study done by Government of India the highest sexual offences were reported in Assam(57.27%) , Delhi (41%) , Andhra Pradesh (33.87%) , and Bihar (33.27%) . Sexual abuse is increasing in terms of children and in last two decades , an increase in sexually transmitted diseases is seen in children . For the children POCSO Act was passed in 2012 . Sexual Assault case are in Section 375 , 376 , 354 and 509 IPC and IEA act 1872 .



LEVERAGING ARTIFICIAL INTELLIGENCE TO INTEGRATE FORENSIC DATABASES

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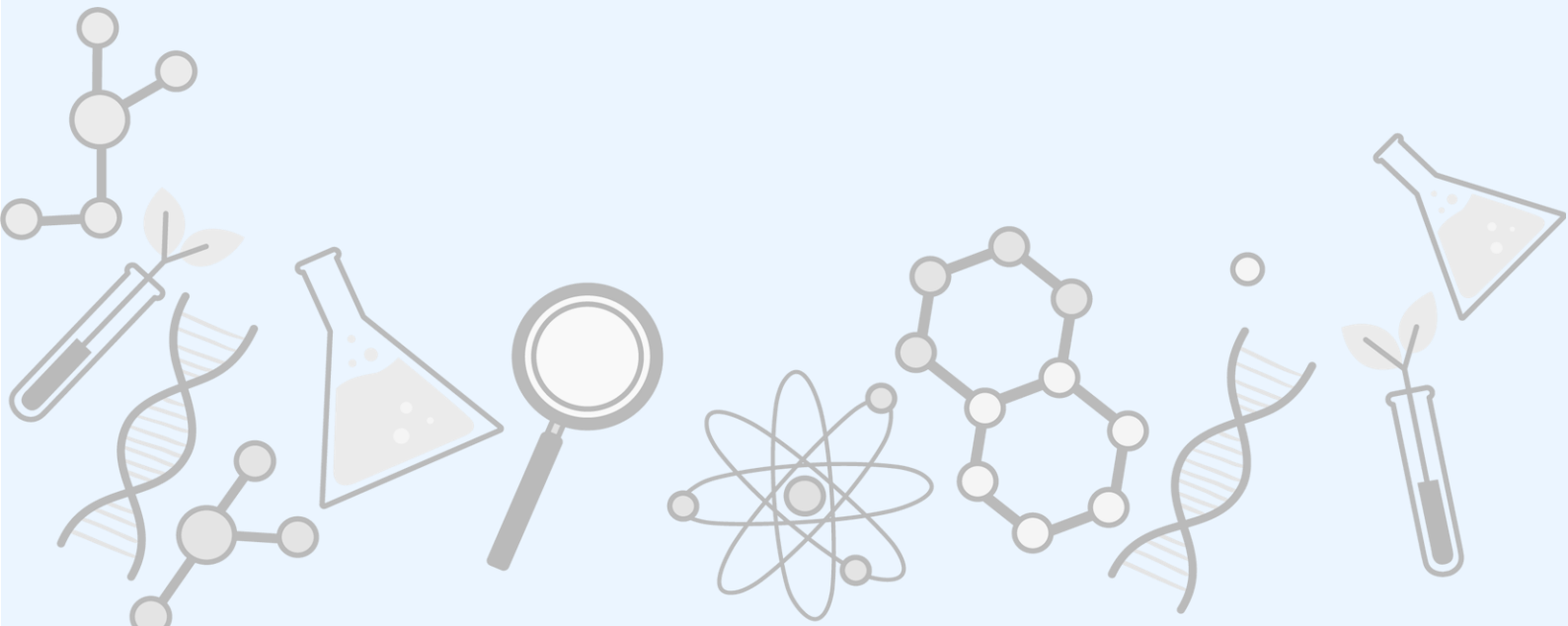
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Abstract:

Forensic science stands as a pivotal pillar in ensuring justice within society. Technological enhancements are imperative with the pressing need for swift and accurate justice delivery in the face of escalating crime rates. This research delves into the integration of cutting-edge technology to propel the field of forensic science forward. By capitalizing on the strides made in artificial intelligence (AI), a paradigm shift emerges in the organization and retrieval of critical information from vast databases. The paper extensively analyzes existing literature, case studies, and practical implementations, highlighting the manifold advantages of AI deployment. Key application areas include automated evidence matching, meticulous data validation, and the extraction of real-time insights. This research also candidly addresses the intricate challenges posed by AI adoption, encompassing data privacy concerns, algorithmic bias, and ethical considerations. As the boundaries of forensic science expand through AI integration, the potential to expedite justice and enhance accuracy becomes a tangible reality.

Keywords: Forensic science, technology advancements, AI integration, automated evidence matching, data validation, real-time insights, crime rates, organized database, algorithm bias, data privacy, ethical considerations.



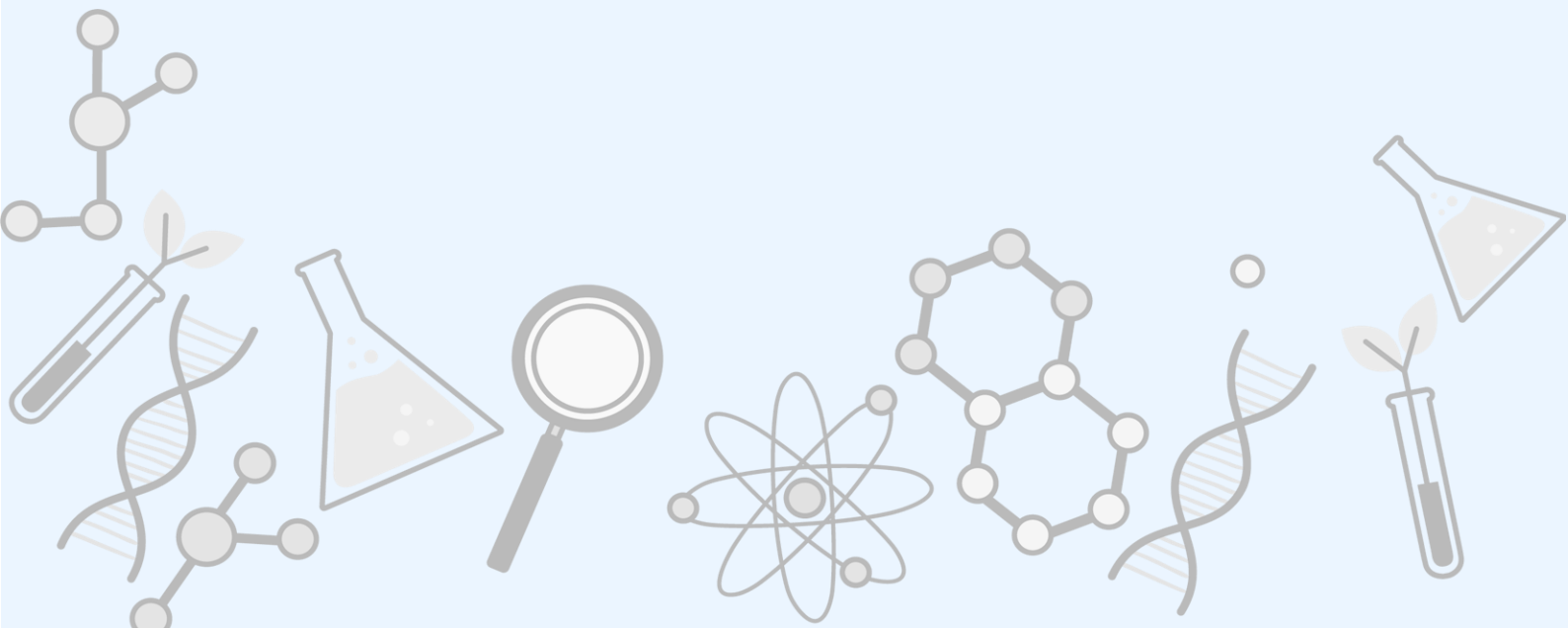
A COMPREHENSIVE OVERVIEW ON FORENSIC ENTOMOTOXICOLOGY

Prachi
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Abstract:

Forensic entomology is a field of forensic science which deals with the study of insects and other arthropods in solving cases such as murder, suicide, rape or other crimes involving physical abuse or drugs trafficking. Entomotoxicology is a specialised branch of forensic entomology that studies the interaction of different pharmaceuticals or drugs or toxins with insects that are associated with dead bodies. Entomotoxicology in forensics has gained popularity as insects serves as alternative evidence, when conventional toxicological samples such as blood, urine or internal organs have degraded or are no longer available. Dead bodies which are in advanced stage of decomposition or which are skeletonized are difficult to examine for toxicological substances. In such cases, the larvae feeding on the body can be analysed for the presence of toxic substances. These results can be used by the forensic entomologist for the estimation of postmortem interval (PMI) or cause of death from decomposed bodies or tissues in medico criminal investigations. This article discusses about the branches of entomotoxicology, insects as toxicological samples along with its collection, preservation and analysis using various instrumental techniques.

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DNA IDENTIFICATION OF BURNED SKELETAL REMAINS

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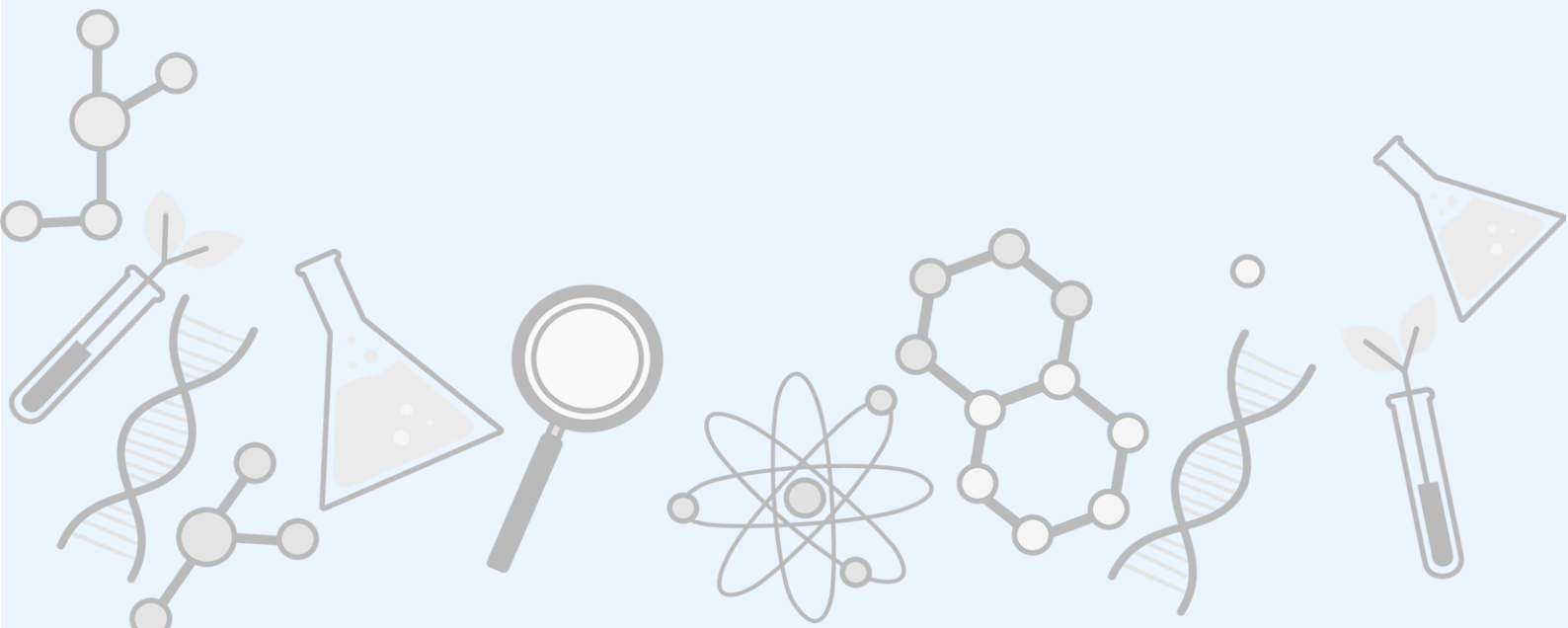
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Abstract:

For identification of skeletal remains and solving missing persons cases, the forensic application of the latest DNA technology is of utmost importance. In our casework, most extraction attempts of skeletal remains from cases of criminal burning, with intention to destroy the body, were successful. DNA extraction is a critical step for the efficient recovery of highly-degraded and damaged DNA from burned skeletal remains, and for forensic DNA profiling of missing person remains.

In homicidal cases, where dead bodies are burnt with very frequent and specific aspiration to dismantle the evidences and concealment the identity of the deceased. In such cases, it becomes to determine the cause of death on the spot due to burning and the presence of soot. In addition of it, Isolation of DNA from the remnants of dead bodies or blood present on the partially burnt belongings i.e. clothes, body tissues etc. is a tedious process. By this time, no technical process exists that could deal with such samples that has confronted the elevated temperature during burn process. It's very cost effective reason to hide crime. In the process of cremation temperatures about to 870-980°C (1,600-1,800°F) for 60-80 min or longer, after burning the dead body only leaving severely burnt teeth and some remains of long charred bones. In various criminal and civil cases, there is a requirement of DNA profiling for ascertained identity of the person and also help to solve the paternity-related issues. THIS POSTER EXPLAIN HOW DNA IS EXTRACTED FROM BURNED DEAD BODIES

Keywords: Dead bodies, DNA profiling, Burning, Homicide, etc



EVALUTING HIGHLY EFFICIENT & ADVANCED SENOSERS FOR NARCOTICS DETECTION

Prarthna Guru, Tejasvi Pandey

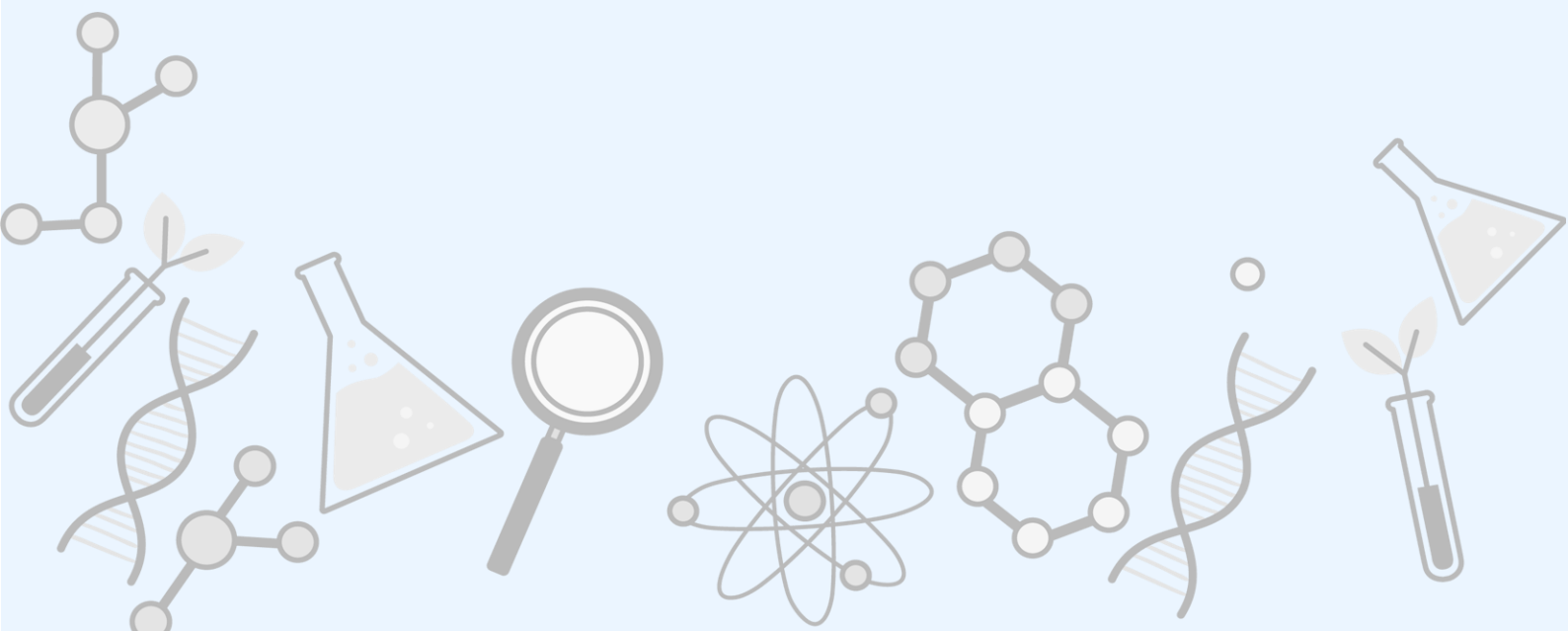
School of Bioengineering & Bio Sciences Lovely Professional University

Abstract:

Conventionally narcotic drugs such as opioids, cannabinoids & cocaine were detected with colorimetric spot tests & hyphenated instrumentation, but they had major drawbacks of being less sensitive, less accurate, less precise & cumbersome. With the advancement of science & technology, currently standardized mini portable real time drug sensors are being used. They are highly sensitive & give precise results even with a very trace amount of drug sample, provide rapid result, have inbuilt drug library which is able to detect the traces of synthetic derivatives. This technology has offered a low-cost detection of narcotics; thereby, providing a confirmatory platform to compliment the existing analytical methods. With progress in multidisciplinary application various sensor such as optical sensors , immune sensors , electrochemical sensors are in current use for detection of narcotics at the site of crime . Presently researches are being conducted to infuse the science of nanotechnology with analytical sciences to manufacture nano-based sensors for more precised, compact & accurate results. These nano-based sensors are not only used for detection of narcotics at crime scene rather can also be used to detect the type & quantity of narcotics in bio sample for doping tests

Keywords- Narcotic drugs, standardized mini portable drug sensors, optical sensors, immune sensors, nano-based sensors, low-cost detection techniques

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INSECTS AS SILENT WITNESSES: ROLE OF ENTOMOTOXICOLOGY IN FORENSIC INVESTIGATION

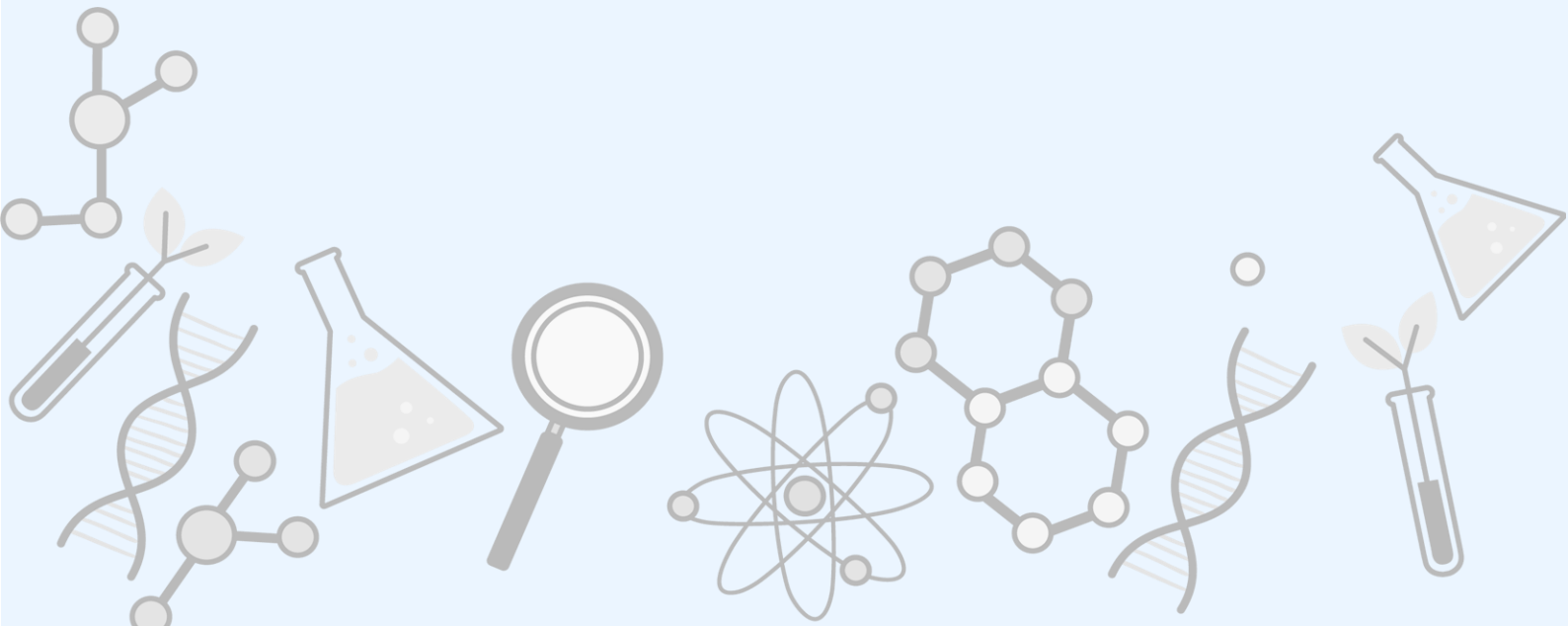
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Abstract:

ENTOMOTOXICOLOGY, derived from the Greek words "entomon," which means insect "toxikos," which means poison, and "logos," which means subject matter, is the study of xenobiotics related to insects, coined by Pounder in 1991. The review outlines the stages of decomposition and the insect succession process, emphasizing the importance of insects in estimating postmortem intervals (PMI). Various methods are employed for sample collection, preservation, and extraction, with chromatographic techniques coupled with mass spectrometry being the preferred analytical approach. Quantitative and qualitative analyses reveal drug concentrations in insects, aiding in identifying poisonings, verifying drug use, and determining PMIs. Despite promising findings, challenges exist, including the lack of research on drug pharmacokinetics in insects and the limited understanding of correlations between drug concentrations in insects and substrates. Advancements in analytical techniques, such as spectroscopy combined with statistical tools, offer non-destructive methods for entomological analysis. Entomotoxicology holds significant forensic significance, enabling PMI calculation, identification of poisoning, verification of drug use, and consideration of environmental contexts. However, limitations remain, urging further research to understand drug dynamics in insects comprehensively. In conclusion, entomotoxicology emerges as a valuable tool in forensic investigations, but ongoing research is essential to enhance its reliability and applicability.

Keywords: Entomology, Toxicology, Entomotoxicology, Xenobiotics, Toxicological Analysis, Postmortem Interval



UNRAVELLING THE MYTH OF UNASSAILABLE TRUTH: DNA EVIDENCE IN THE JUSTICE SYSTEM

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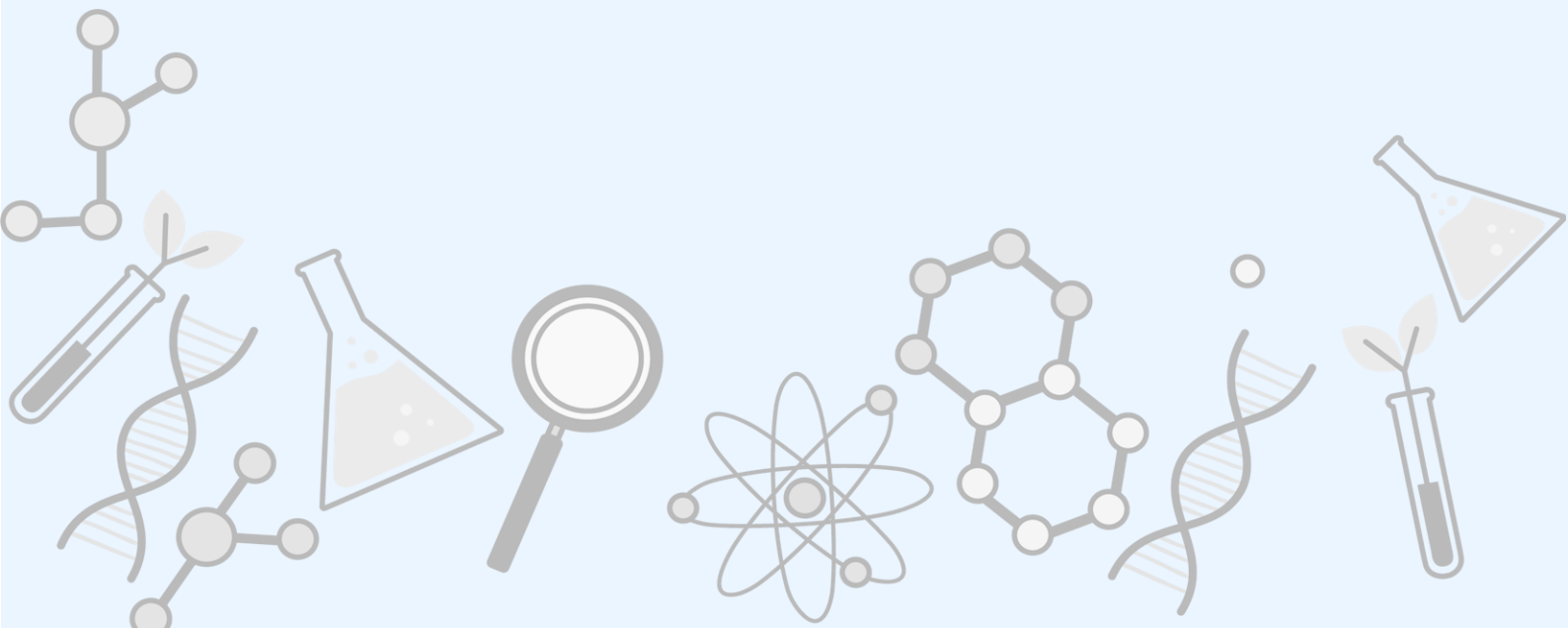
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DNA evidence has become a cornerstone in modern forensic science, tool for identifying perpetrators and exonerating the innocent. However, this perception overlooks the complexities and limitations inherent in DNA analysis. This paper critically examines the limitations and potential pitfalls of DNA evidence in criminal justice proceedings. Through an analysis of case studies and articles, it investigates instances where DNA analysis has led to wrongful convictions or misinterpretations, highlighting factors such as contamination, transfer, misinterpretation, low DNA quantities and subjective judgment. By shedding light on these challenges, the study aims to foster a more refined understanding of DNA evidence's role in the justice system and advocate for improved protocols and safeguards.

This paper employs a comprehensive review of legal cases, and scholarly articles related to DNA evidence in criminal justice. Case studies are analysed to identify patterns and factors contributing to wrongful convictions or misinterpretations of DNA evidence. Key themes and challenges are synthesized, providing insights into the limitations and vulnerabilities of DNA analysis in legal proceedings.

Despite its widespread use and perceived reliability, DNA evidence is not immune to error or manipulation. Contamination, transfer, misinterpretation, and other factors can lead to wrongful convictions or misinterpretations, highlighting the need for caution and scrutiny in its application. Improved protocols, rigorous standards, and greater transparency (addressing the "CSI effect") are essential to mitigate the risks associated with DNA evidence and ensure that justice is served accurately and fairly.

Keywords: DNA evidence, CSI effect, criminal justice, wrongful convictions, challenges, contamination, transfer, misinterpretation, limitations, safeguards.



DECIPHERMENT OF LATENT FINGERPRINT USING TALCUM POWDER ON VARIOUS SUBSTRATE

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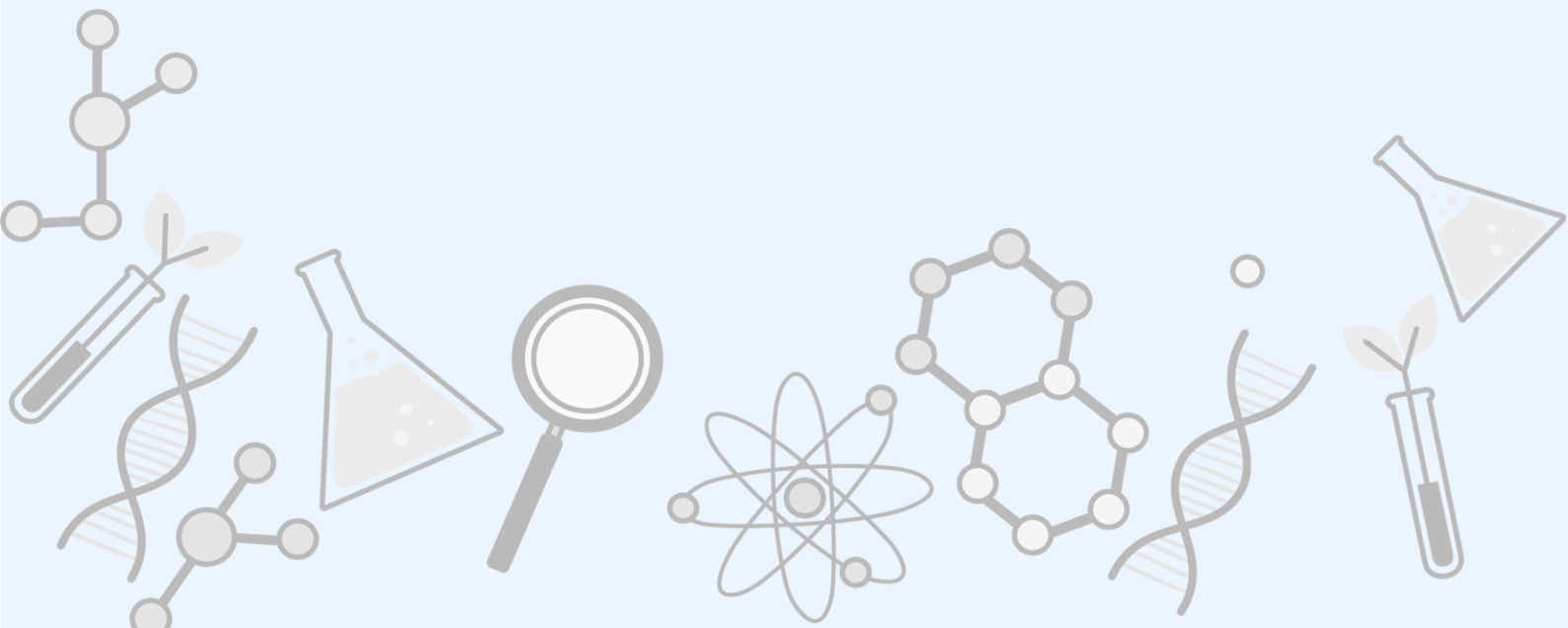
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Abstract:

For over a century, law enforcement agencies, forensic laboratories and penal courts worldwide have used fingerprint impression as reliable and conclusive evidence to identify perpetrators of criminal activity. Fingerprints are unique to each person, which makes it valuable for investigators to examine and help narrow down a list of possible suspects. Decipherment of latent fingerprint are one of the most common tasks in crime scene investigation as it carries the unique identification feature of the individuals related to that offence. In present work, a commercially available talcum powder, generally used as a common cosmetic product, has been used to decipher latent prints on non-porous and semi-porous surfaces commonly encountered in daily life. The development of fingerprint depends on the different factors like fineness of powder, adherence property of powder and pigmentation of powder should be in contrast with surface for visibility of fingerprint. Talcum powder is economic and harmless in nature. The results showed that the powder developed good quality fingerprints on most of the surfaces and can be a good substitute of conventional powder.

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THE ART OF CRIMINAL INVESTIGATION

Sunshiney

Lovely Professional University, Forensic sciences

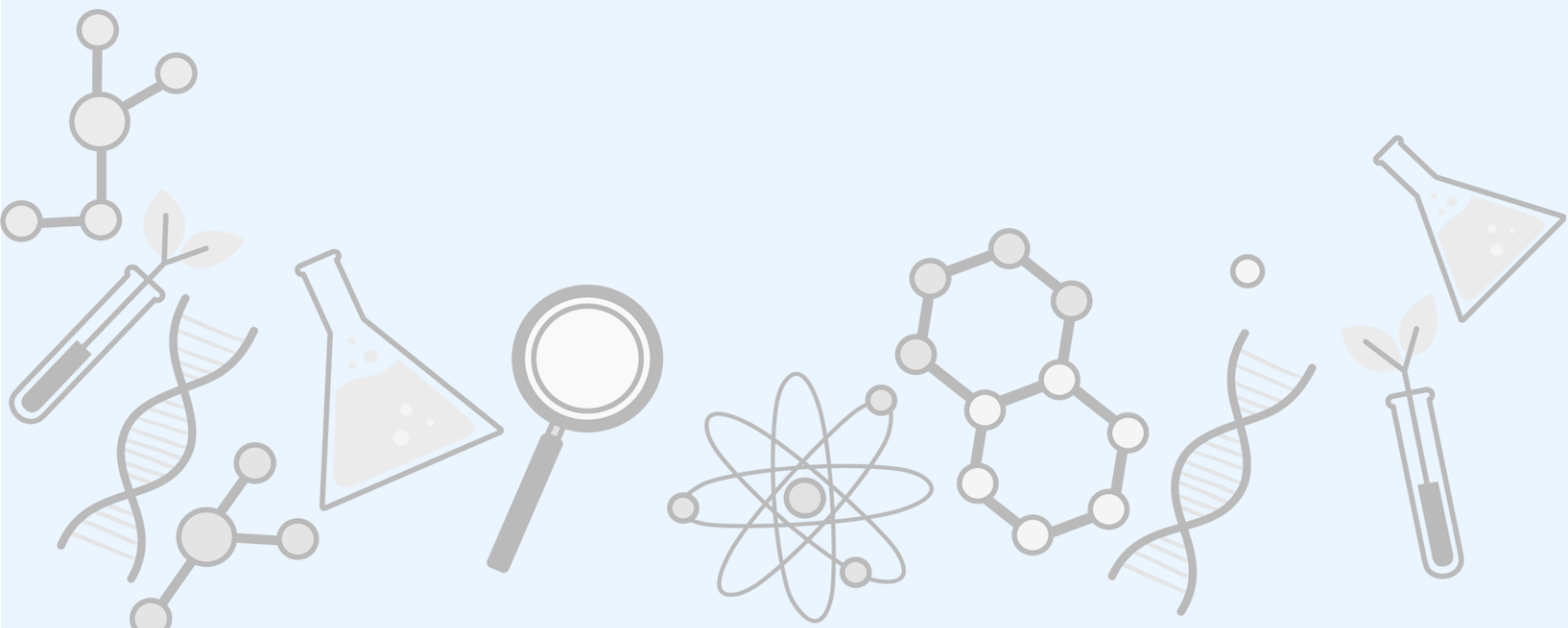
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Abstract:

The art of criminal investigation is very crucial and vital in solving criminal cases and ensuring that justice and fairness is achieved for victims of crime. Criminal investigation is not limited to the police department but also duty of forensic department to solve critical criminal cases. The first part contains about the fundamentals of criminal investigations. The second part contains the investigative process and includes on documenting the crime scene, search and seizure, identifying criminal suspects, the criminal intelligence. The third part deals with the types of criminal cases which usually takes place. The fourth part deals with the different offences for different crimes. The fifth part and final part discusses about the prosecution and preparation for the court. Today, criminal investigation is a broad term dealing about various perspectives. This aims to determine how events occurred, and to establish and evidence-based fact pattern to prove the guilt or innocence of an accused person in a criminal event or crime.

The criminal investigators are mostly tasked with finding out the who, what, why, and how of the crime. So, this investigation helps in answering all these questions. The goal of a crime scene investigation is to identify, collect, interpret, and reconstruct all the essential forms of evidences which may be chemical, physical and biological evidences. Good crime scene management is critical to the effective application of forensic science in the criminal investigations.

Keywords: Crime scene, Offences, Evidences, Criminals, Police department.



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the last nine years by India Today and amongst the top 3% Universities globally by QS and Times Higher Education. Amity is also the only University in India to have US regional accreditation by WASC (USA) and by QAA (UK). It is part of the Amity Education Group with over 2,00,000 students across campuses in 16 countries.

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Amity Institute of Forensic Sciences is an institute of Amity University came into existence by an act under the

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AMITY INSTITUTE OF FORENSIC SCIENCES

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