



RESEARCHER CURRICULUM VITAE/RESUME

(A) PERSONAL INFORMATION:	
1.	Name : Nasir Tsafe Umar-Tsafe Other Name(s) : Nasir Tsafe Umar, Nasir Umar-Tsafe
2.	Academic/Professional Name-tags : BSc (Sokoto), PGD (Leeds), AIBMS (London), MSc (Malaysia), i-MLSCN (Abuja), MPH (Non-Grad)
3.	Passport Numbers : B833451, A2156171, A01374006 and <u>A07614447.</u>
4.	Sex : Male
5.	Marital Status : Married
6.	Date/Place of Birth : 28 December 1968/Tsafe-Nigeria
7.	LGA/State of Origin : Tsafe/Zamfara
8.	Nationality : Nigerian
9.	Telephone/Mobile No. : +234 (0)806 821 7026; +98 (0)936 220 9950.
10.	Email Address : untsafe@yahoo.com ; untsafe@gmail.com
11.	Current Academic Affiliations (June 2021 to Date) : [a] Pharmaceutical Sciences Research Centre, Shahid Beheshti University of Medical Sciences, Tehran, Vali e Asr Street @ Niayesh, SW of Hashemi Rafsanjani Highway, P-Code 199683-5113, I.R. Iran. [b] Health in Emergencies & Disasters Dept, School of Public Health & Safety, Shahid Beheshti University of Medical Sciences, Tehran, Yemen St @ Shahid Shahriari Sq, Shahid Chamran Highway, Postal Code 198353-5511, Islamic Republic of Iran.
12.	Current Position/Employment Address : <u>2010-Date</u> : Co-ordinator & Laboratory Manager, Centre for Lead Poisoning Control & Prevention, Department of Public Health, Ministry of Health, KFA Women & Children Hospital, 880001 Samaru, Gusau, Zamfara State, NIGERIA.
13.	Year/Position/Address of Previous Employment(s) : [a] <u>2007-2009</u> : Teaching Assistant/Health Care Assistant: Teaching Personnel/Southern Cross Healthcare, Nottingham, NG7 6LH/NG4 3AX, United Kingdom. [b] <u>1997-2006</u> : Research Assistant/Trainee Lecturer: Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia / Management & Science University, 40410, Shah Alam, Malaysia.
14.	Security/Criminal Records (Disclosure Check Results) : None Recorded (Copies of results from both the UK, Malaysia & Nigeria are available)
15.	Signature and Photograph :  
16.	Date Revised : 01 st June 2021

(B) EDUCATIONAL QUALIFICATIONS:	
B1. Academic Qualifications:	
Level 1	: Bachelor of Science (BSc) Degree
Field	: Biochemistry (Coursework & Thesis)
Year of Completion	: 1990
Name and Place of Institution	: Usmanu Danfodiyo University, Sokoto, Nigeria.
Title of BSc Thesis	: Urinary and Serum Oxalate in Pregnant Women in Usmanu Danfodiyo University (UDU) Teaching Hospital, Sokoto.
Major Courses	: General Biochemistry Courses; Physical & Analytical Biochemistry; Clinical Biochemistry; Pharmacological Biochemistry; Industrial Biochem.; Physical & Inorganic Chemistry; Organic Chemistry; Advanced Organic Chemistry; Plant Physiology; Genetics, Mathematics, Physics and General Studies.
Level 2	: Post Graduate (PG) Diploma (for AIBMS London)
Field	: Clinical Laboratory Sciences (Coursework & Thesis)
Year of Completion	: 1995
Name and Place of Institution	: University of Leeds, Leeds, United Kingdom.
Title of PGD Dissertation	: Risk Assessment in the Laboratory.
Core Modules	: Cellular Pathology; Clinical Endocrinology; Clinical Laboratory Science; Clinical Case Studies; Homeostasis; Adaptation & Disease; Immunity & Infection; and Research Dissertation.
Level 3a	: Master of Science (MSc) Degree
Field	: Genetics (Anti-Cancer & Genotoxicity, 25% CW & 75% Research)
Year of Completion	: 2008
Name and Place of Institution	: Universiti Putra Malaysia, Serdang, Malaysia
Title of MSc Thesis	: Elucidation of Basic Mechanisms of Flavokawin B Inhibitory Effects on the Growth of Selected Cancer & Transfrmd Normal Cell Lines.
Core Courses	: Industrial and Environmental Toxicology; Special Topics in Human Genetics; Health Research Methods and Biostatistics; Research Proposal Seminar; English for Graduate Studies; Basics of Malay Skills 1 and Masters Research Thesis.
Level 3b	: Public Health Training Course (Non-Graduating)
Field	: Field Epidemiology and Laboratory Management (25% Coursework and 75% Fieldwork/Research)
Training Period	: 2011 – 2013 (Reg. No.: ABU/MPH/NFELTP/MED/00029/2011)
Name and Place of Institution	: Ahmadu Bello University, Zaria, NIGERIA
Title of Training Research Thesis	: Genotoxicity of Lead in Blood and Buccal Cells of Under-Five Children in Bagega and Tsafe, Zamfara, Nigeria
Compulsory Courses (All Passed)	: Basic Epidemiology; Biostatistics; Public Health Surveillance; Computer Application; Research Methodology; Priority Diseases; Scientific Communications; Advanced Epidemiology; Zoonosis; Laboratory Management and Policy; Laboratory Quality Management; Fundamentals of Laboratory Methods; Teaching and Mentoring; Leadership and Management; Special Topics in Public Health; and MPH Research Thesis.
Level 4a (Current Studies)	: Doctor of Philosophy (PhD) Degree / Professional Certificate
Field(s)	: Toxicology (by Research) / Disaster Epidemiology
Year of Commencement	: June 2021 to Date (on-going)
Name and Place of Institution	: Shahid Beheshti University of Medical Sciences, Tehran, I.R. Iran

(C) PROFESSIONAL QUALIFICATIONS/EXPERIENCE:	
C1. Professional Courses/Trainings Completed:	
Field 1 Year of Completion Name and Place of Institution	: Biomedical Sciences ('AIBMS' Associate Diploma Certificate) : 1995 : Institute of Biomedical Science (IBMS), London, UK.
Field 2 Year of Completion Name and Place of Institution	: Course on Food & Water Microbiology (1 PCFH Certificate) : 1995 : The Royal Institute of Public Health and Hygiene, London, UK.
Field 3 Year of Completion Name and Place of Institution	: Trainings for Supply Teachers & Health Care Assistants (11 Certs.) : 2007 and 2008 : Teaching Personnel; Southern Cross Healthcare, Nottingham, UK.
Field 4 Year of Completion Name and Place of Institution	: Webinar Course on: Primary Human Cell Culture (1 Certificate) : 2010 : The American Type Culture Collection, Corning and SIVB, USA.
Field 5 Year of Completion Name and Place of Institution	: Webinar Course on: Optimizing RNAi for Cell Culture (1 Cert.) : 2010 : The American Type Culture Collection, Corning and SIVB, USA.
Field 6 Year of Completion Name and Place of Institution	: Trainings on: Lead Poisoning Treatment and Prevention (3 Certs.) : 2010, 2011 and 2012 : The CDC in NYC-USA, CDC in Gusau & WHO in Gusau, Nigeria.
Field 7 Year of Completion Name and Place of Institution	: Trainings on: TB-HIV Laboratory Diagnosis/Research - ART (Reflotron analyser, Sysmex and Cyflow cytometers), DOT (AFB Smear - Transmission and Fluorescence), TB Culture (LJ and MGIT) and PCR (L-Probe MDR-TB typing & HIV-Viral load quantifications) : 2011 and 2012 : National TB and Leprosy Training Centre, Saye, Zaria, Nigeria.
Field 8 Year of Completion Name and Place of Institution	: Training Workshop on GeneXpert Technology: An Xpert-MTB/RIF for the diagnosis of tuberculosis: The How and Wow of New Developments. : 2012 : African Society for Laboratory Medicine, Cape Town, S/Africa.
Field 9 Year of Completion Name and Place of Institution	: Training Workshop on HIV Antiretroviral Drug Resistance and Genotyping/Gene Sequencing. : 2012 : NHLS @ 1 st ASLM Conference, Cape Town, South Africa.
Field 10 Year of Completion Name and Place of Institution	: Training on: Cluster Sampling Survey - A Prevalence Study on Lead Poisoning in 14 LGAs of Zamfara State (1 Certificate) : 2012 : NFEITP Training Centre, Asokoro, Abuja, Nigeria.
Field 11 Year of Completion Name and Place of Institution	: National Stop Transmission of Polio (NSTOP) National Supervision Officers Course (1 Certificate) : 2013 : CDC-NSTOP/AFENET Training Center, Asokoro, Abuja, Nigeria.
Field 12 Year of Completion Name and Place of Institution	: <u>Webinar/eSeminar Courses on:</u> Studying Laser Microirradiation Induced DNA Damage & Repair Using Live Cell Microscopy; Learn How to Analyze Chromosomal Microarray Data from Blood, Single Cell, Hematological and Solid Tumor Samples; ATCC Molecular Signature Panels – Powerful Tools for the Genomics Age; Emergencies of SARS-CoV-2 Variants ; Racial & Ethnic Disparities and CoVID-19. : 2013 – 2021 (5 Certificates) Elsevier Scientific BV, Andor Technology & AC Medical Toxicology.

C2. Professional Memberships/Societies:	
Professional Body 1 Membership Level Membership Period	: Institute of Biomedical Sciences (IBMS), London, UK. : Associate Member (AIBMS) : 1995 to Date.
Professional Body 2 Membership Level Membership Period	: Biochemical Society (BS), Surrey, UK. : Student Member : 1996 to 1997.
Professional Body 3 Membership Level Membership Period	: Asia-Pacific Association of Medical Toxicology (APAMT), Malaysia : Life Member : 2001 to Date.
Professional Body 4 Membership Level Membership Period	: Genetics Society of Malaysia (GSM), Kuala Lumpur, Malaysia : Student/RA Member : 2003 to 2008.
Professional Body 5 Membership Level Membership Period	: European Society for Toxicology in Vitro (ESTIV) Ostend, Belgium. : Student Member : 2006 to 2007.
Professional Body 6 Membership Level Membership Period	: American Society for Microbiology (ASM), USA. : Global Outreach Member : 2012 to Date.
Professional Body 7 Membership Level Membership Period	: African Society for Laboratory Medicine (ASLM), Ethiopia : Student Member : 2012 to Date.
Professional Body 8 Membership Level Membership Period	: Medical Laboratory Science Council of Nigeria (MLSCN), Nigeria. : Foreign-Graduate Internship/Associate Member (iMLSCN) : 2013 to Date.
Professional Body 9 Membership Level Membership Period	: Epidemiological Society of Nigeria (EPISON), Abuja, Nigeria. : Resident Member : 2013 to Date.
C3. Relevant Computer/IT Skills and Experience:	
Microsoft Office Applications	: Access, Excel, Outlook, Picture, Power Point, Publisher and Word.
Statistical Software Applicatns.	: Epi-Info, OpenEpi, CPro, SAS, SPSS & STATA.
Graphics Software Applicatns.	: Adobe-Photoshop, ChemDraw, Corel Draw, Kodak, Omnipage.
Referencing/Literatr. Softwares	: Biomednet, End-Note, Google Scholar, HINARI-online-system, Mendeley-Desktop, Pubmed, etc.
WebServ Mang't/DigitalLibrary	: CiteSeerX-beta, IEEE-Xplore, SNMProtocol, etc.
Molecular Diagnostics Applic.	Real-Time PCR LightCycler Database, Sequencher-BioEdit
Spoken and Written Languages:	
Hausa, English, Bahasa Malaysia and Arabic	
Hobbies/Other Interests:	
Jogging, Gymnastics, Karate, Swimming, Horse-riding, Hockey, Table-tennis & Volley-ball.	

(D) SUMMARY OF PREVIOUS FORMAL & VOLUNTARY WORKING EXPERIENCE:

Place(s) of Work 1 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: FAG-JIB Tsafe and U.D.U. Teaching Hospital, Sokoto, Nigeria : First Aid Training Officer/Technical Assistant : <u>Voluntary</u> : Project/Routine Diagnostic Tests in Clinical Chemistry : 1985-1988/Project(s) Completion
Place(s) of Work 2 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: A.B.U. Teaching Hospitals, Zaria and Kaduna, Nigeria : Trainee Biochemist and Trainee Medical Laboratory Scientist : <u>Formal/Voluntary</u> : Routine Diagnostic Tests in <u>Chem-Pathology</u> ; in Haematology/BGS; in Micro/Parasitology and in Histopathology : 1987, 1991-1994/ Training Completion & Relocation to the UK
Place(s) of Work 3 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Warehousing/University of Bradford, Bradford, UK : Packaging Assistant/PG Researcher : <u>Formal</u> : Assisting & Supervision of Routine Duties/Conducting <i>In Vivo</i> research on apoptosis and genetic toxicity. : 1995-1997/Job Contract Completion & Relocation to Malaysia
Place(s) of Work 4 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Universiti Putra Malaysia, Serdang, Selangor, Malaysia : Teaching and Research Assistant (Refer to more details below). : <u>Formal</u> : Teaching Cover-Lectures, Designing, Conducting and Supervising Research Activities on Anti-cancer Drug Development. : 1997-2000/ Job Contract Completion.
Place(s) of Work 5 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Universiti Teknologi, MARA, Shah Alam, Selangor, Malaysia : Research Assistant. : <u>Formal</u> : Designing, Conducting, Supervising/Teaching Research Activities on Anti-cancer Drug Development (apoptosis and genotoxicity). Please refer to more details below. : 2000 (May-December)/ Job Contract Completion.
Place(s) of Work 6 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Universiti Putra Malaysia, Serdang, Selangor, Malaysia : Research Assistant. : <u>Formal</u> : Teaching & Training of PG Students, Designing, Conducting, Supervising, Reporting and Publishing Research Projects on Anti-cancer Drug Development, Apoptosis and Genotoxicity (Please refer to more details below). : 2001-2005/ Job Contract Completion.
Place(s) of Work 7 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Management & Science University (formerly KUTPM), Malaysia Tutor (Trainee Lecturer & Researcher). : <u>Formal</u> : Teaching various subjects in Biomedical Sciences, Syllabus Development, Designing, Supervising and Publishing Final Year Research Projects on Anti-cancer, Apoptosis and Genotoxicity (Please refer to more details below). : 2005-2006/ Relocation to the UK.
Place(s) of Work 8 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Queens Medical Centre, Biomedical Sciences, University of Nottingham, Nottingham, UK : Visiting Researcher. : <u>Voluntary</u> : Conducting and Reporting Research Activities on Pyrethroids Toxicity <i>in vivo</i> . : 2006-2007/Project Completion.
Place(s) of Work 9 Position(s) Job Nature/Duties(s) Date(s)/Reason for Leaving	: Southern Cross HealthCare (Westwolds & Chanwood Court NH) and Teaching Personnel, all in Nottingham, UK : Health Care/Teaching Assistant : <u>Formal</u> : Health Care, Teaching & Supervision in Care Homes, Schools and Colleges in Nottinghamshire & Leicestershire, UK : 2007-2009/Relocation to Nigeria.

(E) N T UMAR-TSAFE's PERSONAL MOTIVATIONAL NOTES:

- [1] I am very enthusiastic, hardworking, patient, love learning and ever-ready to adapt and be flexible.
- [2] **In the UK:** At Universities of Leeds and Bradford (**1995,1996**), I conducted research projects on COSHH CC-Hazard system in Chemical Pathology Lab. and *In vivo* Apoptosis and Genotoxicity Studies in MLr/lpr Mice.
- [3] **In Malaysia (Universiti Putra Malaysia, 1997-2005)**, I had the opportunity of teaching human/mammalian *in vitro* cell culture to undergraduates (BSc) as well as some postgraduates (MSc & PhD) students from the areas of Biochemistry, Genetics, Biomedical Sciences, Biotechnology, Medical Laboratory Sciences, Pharmacology and Drug Development.
- [4] I have experience in **establishing/setting up**, as well as **administering/managing** any teaching, research, or routine diagnostic laboratory, in the areas of biomedical sciences, biotechnology and public health. I am also able to write-up good and acceptable research proposal(s) for research grants such as IRPA/Others (Malaysia), IFS (Europe) and other grant applications (at local and international levels).
- [5] I have some experience in the **designing, conducting, supervising, reporting and or publishing** successful outcomes of research projects conducted at the levels of Diploma, BSc, MSc and PhD programmes.
- [6] At the **Management and Science University Malaysia (KUTPM, 2005-2006)**, I had the opportunity of Teaching 'Physical Chemistry' (to Diploma Pharmacy Students), 'Anatomy', 'Cell Biology & Genetics', 'Medical Diagnostic Instrumentations', 'Public Health' and 'Physiology' (to BSc Biomedicine Students).
- [7] **Completed Research Projects in Malaysia (2005-2007):** Eight (8) Projects completed in collaboration between **KUTPM, UPM and UiTM**, with six (6) research titles on Genotoxicity (*in vitro* & *in vivo*) and 2 titles on Apoptosis in Anticancer Drug Development (Using Human Breast Cancer & Other Cell Lines).
- [8] **In the UK Again:** At the University of Nottingham (**1995-1996 & 2006-2007**), I was opportuned to experience additional research endeavours on the animal behavioural toxicity and biochemical toxicity of pyrethroids (pesticidal agents), under the supervision of Assoc. Professor David E. Ray (MRC Applied Neuroscience Group and Biomedical Sciences, University of Nottingham/QMC, UK).
- [9] My teaching and care assistant jobs in **Nottingham, 2007-2009**, enabled me to get equipped with some rich and positive experience in dealing with the young and old population of the UK society.
- [10] **Lead Poisoning, Cholera, Meningitis, Measles & Gastroenteritis Outbreak Investigations in Zamfara State, Nigeria & Polio Eradication (MST-NSTOP) in Nigeria (2010 to 2020):** Participated in at least 25 different project activities so far on Full Outbreak Investigations/Surveys: House-to-House, Scoping, Cluster and Outbreak-verification Surveys on LPO Characterisation, on Soil Remediation, on Water Remediation and on Health Education; conducted by the CDC-NFELTP-RRT, WHO-RRT, Blacksmith/ Terragraphics-RRT, UN/Dutch-RRT, UNICEF-SHEU-WHO-RRT and NFELTP-RRT, respectively, in Anka, Bukkuyum, Maru, Gusau and 10 other LGAs in Zamfara State, Nigeria. I also conducted preliminary, full cases&control outbreak investigations/interventions for cholera, meningitis, measles, gastroenteritis & Polio in Kano, Zamfara, Sokoto, Kogi & Niger States, Nigeria.
- [11] **DNA Labs, Kaduna (2013-2015):** Consultant Med. Lab. Scientist & QMS Officer (Diagnostics/Research: **DNA/RNA Viral Loads**, Chemical Pathology, Immunology, Haematology, **Cell Culture and Cytogenetics**).
- [12] During my **34 years general working experience (1987 - 2021)** through research works, postgraduate studies and teaching, in the areas of biomedical/medical laboratory sciences, biotechnology, biopharmaceutics/pharmacogenomics, public health, environmental health, field epidemiology, cellular/molecular genetics and toxicology, I have acquired lot of skills which are relevant to diagnostic, experimental, teaching, therapeutic/curative, control & preventive health applications. The synchronized areas of my skills/techniques are listed - next page, please.

(F) N T UMAR-TSAFE's LIST OF SPECIAL SKILLS/TECHNIQUES ACQUIRED THROUGH TRAINING AND EXPERIENCE:

I. Routine Medical Laboratory Diagnostic techniques in:

- a. Chemical Pathology
- b. Haematology, Phlebotomy & Blood Group Serology
- c. Histopathology
- d. Immunology
- e. Microbiology & Parasitology

II. Teaching:

As a Graduate Research Assistant, a Tutor/Trainee Lecturer, a Lecturer, a Researcher – taught students of Diploma Pharmacy and BSc Biomedicine at MSU; also taught students of BSc, MSc and PhD programs at the UPM (please refer to Places of Work C4 - 7 in page 4 of 13).

- a. Courses Taught: Anatomy, Cell Biology & Genetics, Medical Diagnostic Instrumentations, Physical Chemistry, Physiology and Public Health; *In vitro* Primary/Continuous Cell Culture.

III. In Vitro Cell Culture, with:

- a. Over 30 different human cell lines of transformed-normal and tumour origins. I have personally cultured, propagated, frozen and utilized these cell lines for anticancer drug development, genotoxicity and other experimental purposes.
- b. Three (3) different mammalian cell lines, monkey (VERO, normal kidney cells), hamster (CHO, normal ovary cells) and rat (c6, gliomal cells). I have personally cultured, propagated, frozen and utilized these cell lines for anticancer drug development, genotoxicity, viral infection and other experimental purposes.
- c. Two (2) insect cell lines, fall armyworm ovary epithelium (sf9, *Spodoptera frugiperda*) and fruit fly embryo epithelium (L2, *Drasophila melanogaster*). I have personally cultured, propagated, frozen and utilized these two lines for viral infection and karyotyping purposes, respectively.

IV. Primary Cell Culture:

- a. Human Breast Epithelium and Carcinoma
- b. Human Cervical and Ovarian Cancer
- c. I have personally managed to set-up, cultured, propagated, frozen and participated in the establishment of primary cultures from the above mentioned tissues (IV a and b). I have also utilized some of these cells for anticancer drug development, karyotyping, **genotoxicity**, genomic-DNA and other experimental purposes.

V. Cytogenetics (Classical and Molecular):

- a. Classical Cytogenetics - metaphase chromosomal synchronization-spread techniques using human, hamster and rat cells, through *in vitro* and *in vivo* experiments.
- b. Karyotyping - applicable to population genetics and medical genetics (e.g., detection of Down syndrome - trisomy 21, Klinefelters syndrome - ploidy X, Turner syndrome, etc).
- c. Molecular Cytogenetics - applicable to population genetics and medical genetics (**FISH, M-FISH, Chromosome Painting, etc**).
- d. Comparative Genomic Hybridization (CGH) - applicable to population genetics, medical genetics and anticancer drug development.
- e. Microarray-CGH and Gene Microarray - applicable to population genetics, medical genetics and anticancer drug development.

VI. Immunohistochemistry (Using Manual Slides/Monolayer-Centrifuge Slides & Rapid 96-Well Test Kits):

- a. Normal Human Epithelial and Cancerous Tissues - applicable to anticancer drug developmt.
- b. Normal Mice Epithelial, Transgenic and Xenograft-tumour Tissues - applicable to anticancer drug development.

VII. Flow Cytometry (Automated)

Mammalian Cell Cycle Analysis, using various cells from *in vitro* and *in vivo* sources to establish cell cycle profile, pre-G1 block and apoptosis analysis - applicable to mechanistic profile studies, medical genetics and anticancer drug development. Diagnostic CD4/Comet Analysis.

VIII. Basic DNA, RNA and Proteomic Techniques (Manual & Automated)

- a. Recombinant and Genomic DNA and RNA Extraction Methods, Agarose Gel Electrophoresis (AGE) – Using manual (phenol chloroform basics), commercial rapid kits and automated techniques, applicable to medical genetics, diagnostic and anticancer drug development.
- b. Basic Proteomic Methods - using two-dimensional gel electrophoresis and silica xerogels, applicable to medical genetics and anticancer drug development.

IX. Gene Cloning and Gene Profiling using PCR, RT-PCR, Real-time RT-PCR

- a. Qualitative & Quantitative DNA/RNA Techniques – using forward Polymerase Chain Reaction (PCR), Reverse-transcriptase-PCR and **Real-time PCR (Hepatitis B, HCV and HIV viral loads)** - applicable to **medical diagnostics, public health** and anticancer drug development.
- b. Gene Profiling – specific profiling of tumour preventive (p53), oncogenic (bcl-2, bax, etc), caspases (c3, c7, etc) and steroidal (pS2) inducible genes – anticancer drug development.
- c. Non-Embryonic Organ Gene Cloning - for pharmacogenetics and organ replacement.

X. DNA Finger Printing:

Maternal and Paternal DNA Identity Profiling; Criminal Identity DNA Profiling. Applicable to medical genetics and forensic medicine.

XI. Pharmacogenomics and Stem Cell Studies:

Individualised Chemotherapeutics, applicable to medical genetics, anticancer drug development and cancer prevention.

XII. Apoptosis and Necrosis Cell Death Analysis (Using Bright Fields, Scanning Electron and Transmission Electron Microscopy, Dark Fields - Fluorescence and Confocal Microscopy Techniques):

Cellular and Molecular Mechanisms of Action of Anticancer Drugs – morphologies applicable to general toxicity, medical genetics, anticancer drug development and cancer prevention.

XIII. Classical Toxicity, Neurotoxicity, Tissue, Cellular & Outbreak Toxicity:

- a. Lethal Dose Analysis, Threshold and Behavioural N.S. Response Analysis
- b. Synthesis/Extraction of Liver Microsomal Enzymes and Cytochrome p450 Analysis. Applicable to general toxicity, medical genetics, anticancer drug dev't & cancer prevention.
- c. Lead Poisoning/CDs Outbreaks: Emergency Response and Research Activities: Investigations, Analysis, Interpretations, Reports/Publications on the Epidemiological, Laboratory, Clinical Management, Pharmacological, Environmental & Health Education Aspects of Outbreak.

XIV. Genetic Toxicity and Anti-genotoxicity (Using the Following End-Points):

Chromosomal Aberrations, Micronucleus Formations (Animal-MNF & Human-MN), DNA Comet Assays, Ames Test & Gene Mutations-applicable to general **safety analysis**, regulatory toxicity, medical genetics, anticancer drug development, cancer prevention & **epidemiology**.

XV. HIV/TB Diagnostic Analysis/Research (through the ART, DOT, BSL2 and PCR Laboratories):

- a. Reflotron analyser, Sysmex/Cyflow cytometers, AFB Smear-Transmission/Fluorescence Microsc.
- b. Mycobacterium tuberculosis culture using the manual LJ/MIGT Culture System
- c. Multidrug resistant tuberculosis identification/gene typing and HIV viral and quantifications.

XVI. Automated TB Gene Analysis and HIV/CD4 Gene Typing/Sequencing:

- a. GeneXpert Sample and Data Analysis: An Xpert-MTB/RIF for the diagnosis of tuberculosis.
- b. HIV/CD4 Sample processing, gene typing/sequencing analysis and interpretations.

(G) DOCUMENTED RESEARCH EXPERIENCE:

1. Specific Number of Years of Experience in the Field of Research & Teaching: 21 Years

2. Fields of Specialization(s) : Biomedical Sciences/Medical Lab. Sciences, Biotechnology, Human Genetics, Field Epidemiology&Laboratory Management.

3. Specific Areas of Research Interest: Genotoxicity/Antigenotoxicity, Molecular Toxicity/Epigenetics, Cytotoxicity/Apoptosis, Pharmacogenetics, Laboratory-QMS, Toxicology, Heavy Metal Poisoning, Disasters and Epidemiology.

4. Major Research Programmes/Projects/Field Works Completed:

Title 1 : Apoptosis and Genotoxicity Studies in the Seminiferous Epithelium of Normal BALB/c & Transgenic MRL/lpr Mice
From : June 1996
To : September 1996
Position held : Researcher
Name and Place of Institution : University of Bradford, UK
Major output : Publication (Local Thesis).

Title 2 : *In vitro* Screening for Cytotoxicity & Apoptosis Induction in Human Leukaemic & Solid-tumour Cell Lines
From : 1997
To : 1999
Position held : Graduate Research Assistant
Name and Place of Institution : Universiti Putra Malaysia, Serdang, Malaysia
Major output : Publications (Local & International).

Title 3 : Anti-tumour Effects of Plant Products on the Metabolism of Estrogens in Breast Cancer Cell Lines
From : 1999
To : 2000
Position held : Research Assistant (Voluntary)
Name and Place of Institution : Universiti Putra Malaysia, Serdang, Malaysia
Major output : Preliminary Results for Grant Application.

Title 4 : Screening of Natural Products from Plants for Identification and Isolation of Novel Chemotherapeutic Compounds
From : May 2000
To : December 2000
Position held : Research Assistant
Name and Place of Institution : Universiti Teknologi MARA (UPM collaboration), Malaysia
Major output : - Preliminary Results for IRPA Grant Application
- Teaching & Training PGs & RAs on Basic Cell Culture and it's Applications in Drug Development and Biotechnology.

(G) 4. Major Research Programmes/Projects/Field Works Completed (Cofinued):

Title 5 : An Assessment of the Genotoxic Potential of Plant Natural Products *In vitro*
From : 2001
To : 2002
Position held : Research Assistant
Name and Place of Institution : Universiti Teknologi MARA (UPM collaboration), Malaysia
Major output : - Publications (Local & International)
- Teaching & Training of PGs & RAs on Genotoxicity and it's Applications in Drug Development and Biotechnology.

Title 6 : Elucidation of the Mechanisms Whereby Flavokawin B Inhibits the Growth of Human Breast Cancer Cell Lines
From : 2002
To : 2005
Position held : Research Assistant
Name and Place of Institution : Universiti Putra Malaysia, Serdang, Malaysia
Major output : - Publications (Local & International)
- Teaching & Training of PGs & RAs on Apoptosis, Cell culture, Cytogenetics, Cytotoxicity and Genotoxicity.

Title 7 : In vitro and In vivo Genotoxicity Studies: Up to Eight (8) Concurrent Projects completed in collaboration between KUTPM, UPM and UiTM, with six (6) research titles on Genotoxicity (*in vitro* & *in vivo*) and 2 titles on Apoptosis in Anticancer Drug Dev.(Hum. Breast Cancer/t-Normal Cell Lines).
From : 2005
To : 2006
Name and Place of Institution : Management & Science University (formerly KUTPM), Malaysia
Position held : Lecturer & Supervising Researcher
Major output : - Publications (Local & International)
- Teaching & Training of BSc Biomedicine Students: Apoptosis Cell culture, Cytogenetics, Cytotoxicity and Genotoxicity.

Title 8 : Neurotoxicity and Biochemical Toxicity of Pyrethroids in Mice
From : 2006
To : 2007
Position held : Visiting Researcher
Name and Place of Institution : Queen's Medical Centre, University of Nottingham, UK
Major output : - Publications (International-Abstract).

Title 9 : HIV Surveillance System Evaluation Report
From : May 2011
To : December 2011
Position held : Field Epidemiology Researcher
Name and Place of Institution : National TB and Leprosy Training Centre, Zaria, Nigeria.
Major output : - NFEITP Bound Volume Report.

(G) 4. Major Research Programmes/Projects/Fieldworks Completed (Continued):	
Title 10	: Suspected Cholera Outbreak Investigation in Zaria LGA
From	: August 2011
To	: September 2011
Position held	: Field Epidemiology Researcher
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume & Stakeholder Reports.
Title 11	: Suspected MenAfriVac-AEFI Outbreak Investigation in Bakura General Hospital (Bakura LGA), Zamfara State
From	: November 2011
To	: December 2011
Position held	: Field Epidemiology Researcher/AEFI Committee Member
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume & Stakeholder Reports.
Title 12	: Suspected Lead Poisoning Outbreak Investigations in Dogon Dajin Sarkin Noma (Bukkuyum) & Maitwasshi (Gusau), Zamfara State
From	: 2011
To	: 2012
Position held	: Field Epidemiology Researcher
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume & Stakeholder Reports.
Title 13	: Cluster Sampling Survey on Lead Poisoning Prevalence in 14 LGAs of Zamfara State
From	: May 2012
To	: July 2012
Position held	: Field Epidemiology Researcher
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume, Stakeholder Reports & Full Publications
Title 14	: Suspected Measles Outbreak Investigation in Magazawa, Tsafe LGA
From	: March 2013
To	: April 2013
Position held	: Field Epidemiology Researcher
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume, Stakeholder Reports and Abstracts
Title 15	: Suspected Gastroenteritis Outbreak Investigation, Tsageru, Tsafe LGA
From	: March 2013
To	: April 2013
Position held	: Field Epidemiology Researcher
Name and Place of Institution	: Nigeria Field Epidemiology & Laboratory Training Program, Abuja
Major output	: NFELTP Bound Volume, Stakeholder Reports and Abstracts
Title 16	: National Management Support Team Supervision Services on routine Immunisations & IPDs (Measles, Yellow Fever & Polio), and suspected outbreak responses (Measles, GE and VDPV2) in Kano, Sokoto, Zamfara and Kogi States, Nigeria.
From	: 2013 to Date
Position held	: National Senior Supervisor (Field Epidemiology Graduate, MST-Officer)
Name and Place of Institution	: National Stop Transmission of Polio (NSTOP) Program, Abuja. Nigeria
Major output	: MST Reports.

(H) RESEARCH ACHIEVEMENTS:

H1. Honours and Awards:

- (a) **The Best Oral Presentation Award** (in Basic Medical Science): 6th National Conference on Medical Sciences Universiti Sains Malaysia, Kubang-Krian, Kelantan, MALAYSIA. May, 2000.
- (b) **Best 10 Research Projects Award**: Research & Invention Exhibition 2001 (Pameran Hasil Penyelidikan), Universiti Putra Malaysia, Serdang, Selangor MALAYSIA. October, 2001.
- (c) **Silver Medal Award**: Invention and Research Exhibition 2002 (Pameran Reka Cipta & Penyelid), Universiti Putra Malaysia, Serdang, Selangor, MALAYSIA. August, 2002.
- (d) **Bronze Medal Award**: Research Invention/Innovation Exhibition 2003 (Pameran Reka Cipta & Penyelidikan), Universiti Putra Malaysia, Serdang, Selangor, MALAYSIA. August, 2003.
- (e) **Bronze Medal Award**, Invention & Research Exhibition 2005 (Pameran Reka Cipta & Penyelidikan), Universiti Putra Malaysia, Serdang, Selangor, MALAYSIA. March, 2005.
- (f) **International Travel Award**, The 1st ASLM International Conference on: Accurate Laboratory Diagnostics: A Pillar of Quality Healthcare, African Society for Laboratory Medicine (ASLM), Cape Town International Convention Centre in South Africa, 1st – 7th December 2012.
- (g) **PhD Scholarship Award**, From Islamic Human Rights Commission, London, United Kingdom @ SBUMS, Iran.

H2. Publications:

(a) **Between 1997 to date, I have a total of 42 publications:**

12 full papers (published in international peer-reviewed journals).

22 abstracts (9 oral, 1 oral-poster & 12 poster presentations) published in abstract-proceedings of International Conferences in Belgium, Brazil, Ethiopia, Greece, Malaysia, South Africa, Tanzania, Thailand, UK and USA.

6 local-abstracts(oral presentations)published in abstract-books of International/National Conferences in Nigeria

2 full paper manuscripts being submitted to international peer-reviewed journals.

(b) **Selected & Latest Publications (2000 to Date):**

1. Tarafder, M.T.H., Ali, A.M., Saravanan, M., Weng, W.Y., Kumar, S., Umar-Tsafe, N., and Krouse, K.A. Co-ordination chemistry and biological activity of two tridentate ONS and NNS schiff bases derived from S-benzylidithiocarbamate. *Transition Metal Chemistry*, **2000**, 25: 295-298 (Elsevier).

2. Ali, A.M., Umar-Tsafe, N., Mohammed, S.M., Inayat-Hussein, S.H., Din, L.B. and A. B. Osman. Induction of apoptosis in leukaemic cells by goniotalamin. *J. Biochem Mol. Biol. and Biophys.*, **2001**, 5(3): 227-235 (Taylor & Francis Ltd., USA).

3. Nasir Umar-Tsafe, Leslie C. Lai, Laily Bin Din, Mohd Ilham Adenan, Rohana Mat Nor, Zaidah Zainal Ariffin, Mohamed Saifulaman Mohamed Said and Rozita Rosli. Preliminary studies on the Genotoxic Potential of Some Local Plant Extracts. *Proceedings of the 5th National Congress of Genetics*, **2003**, O-10: 33-35 (Kuala Lumpur, Malaysia).

4. Umar-Tsafe, N., Mohamed Said, M. S., Rosli, R., Din L. B. and Lai, L. C. Genotoxicity of goniotalamin in CHO cell line. *Mutation Research*, **2004**, 562: 91-102 (Elsevier).

Umar F. Yusuf, Sunny E. Iyuke, Rozita Rosli, Fakhru'l-Razi A., Nashiru Billa and Nasir Umar-Tsafe. In vitro inhibition of human malignant cell growth of crude water extract of cassava (*Manihot esculenta* Crantz) and commercial linamarin. *Songklanakarin J. Sci. Technol.*, **2005**, 28(Suppl. 1): 1-11 (Thailand).

(b) Selected & Latest Publications (2000 to Date) continued:

5. Umar F. Yusuf, Sunny E. Iyuke, Rozita Rosli, Fakhru'l-Razi A., Nashiru Billa and Nasir Umar-Tsafe. In vitro inhibition of human malignant cell growth of crude water extract of cassava (*Manihot esculenta* Crantz) and commercial linamarin. *Songklanakarin J. Sci. Technol.*, **2005**, 28(Suppl. 1): 1-11(Thailand).

6. Nor Aniza Muhammad, Nasir Umar-Tsafe, Rohana Mat Nor, Haniza Harun, Junainah Abdulhamid, Asbi Bin Ali, Rozita Rosli and Leslie C. Lai. Induction of Micronucleus by Double Cheese Burger Extracts in the Erythrocytes of ICR Mice. *Proceedings of the 2nd Health Science Week*, **2006**, 2: P7, KUTPM (Shah Alam, Malaysia).

7. Umar-Tsafe N, Hisamuddin MNM, Rosli R, Mat-Nor R, Harun H, Abdulhamid J, Ali A and Lai, L. C. Antigenotoxicity of phyllanthus niruri in CHO cell line. *Proceedings of the 14th InVitoX Workshop*, **2006**, P4.24, p30-31 (Ostend, Belgium).

8. Mun-Hoe, E. C., Crouse, K. A., Tahir, M. I. M., Rosli, R., Umar-Tsafe, N. and Cowley, A. R. Synthesis and characterization of cobalt(II), nickel(II), copper(II), zinc(II) and cadmium(II) complexes of benzyl N-[1-(thiophen-3-yl)ethylidene] hydrazine carbodithionate and Benzyl N-[1-(thiophen-3-yl)ethylidene] hydrazine carbodithioate and the X-ray crystal structure of bis{benzyl..... *Polyhedron*, **2008**, 27: 1141-1149(Elsevier).

9. von Lindern, I.H., S. A. Haladu, N. T. Umar-Tsafe, J. Pringle, S. Tirima, C. Bartrem, *et al.* (2011). Lead Poisoning Epidemic and Cleanup at Artisanal Gold Mining Operations in Zamfara State, Nigeria". Abstract Article Accepted for the *Proceedings of Conference on Environmental Health 2011 - Resetting our Priorities*. Salvador, Brazil, 6-9 February **2011**. Ref No. p329.

10. Dankoli, R., I. Jibrin, M. Dalhat, A. Nasir, N. Tsafe and P. Nguku. Extent of Lead Poisoning and Environmental Contamination in Three Local Government Areas of Zamfara State, Nigeria, 2010. *Proceedings of 5th AFENET Scientific Conference*, Daressalam, Tanzania. Poster 111, p144, 11-16 Dec, **2011**.

11. Roy, J., A. Neri, C. Dooyema, M.J. Brown, N. T. Umar-Tsafe, R. Philip, J. Jarret, and K. Caldwell. The Blood Lead Level. How can field laboratories respond to mass lead exposure? International Medicines Sans Frontiers (MSF) Conference, London, UK. **2011**.

12. Umar-Tsafe, N. T., Ajumobi, O. O., Nguku, P., Sabitu, K., Shehu, M. S. and Ahmed, S. A., Bagega 2010 FELTP Report and Latest Updates. *Proceedings of the International Conference on Heavy Metal Poisoning, with Special Focus on the Zamfara Lead Poisoning Crisis*, Chida International Hotel, Abuja, Nigeria. Session 4, Module C. May 9-10, **2012**.

13. Behbood, B., Y. Lo, T. Jefferies, J. Durant, A. Neri, N. Umar-Tsafe, A. Medina-Marino, L. de Ravello, D. Thoroughman, L. Davis, R. Dankoli, A. Dama, M. Samson, L. Ibrahim, O. Okechukwu, M.J. Brown. Artisanal Gold Ore Processing and Childhood Lead Poisoning - Nigeria, November 2010. *Proceedings of the 61st Annual Epidemic Intelligence Service (EIS) Conference*, Atlanta, USA. Session G: Global Health, 2:30, p76, April 16-20, **2012**.

14. Lo, Y.-C., C.A. Dooyema, A. Neri, J. Durant, T. Jefferies, A. Medina-Marino, L. deRavello, D. Thoroughman, L. Davis, R.S. Dankoli, M.Y. Samson, L.M. Ibrahim, O. Okechukwu, N.T. Umar-Tsafe, A.H. Dama, & M.J. Brown. Childhood Lead Poisoning Associated with Gold Ore Processing: a Village-Level Investigation -Zamfara State, Nigeria, October-November 2010. *J. Environ Health Perspect* 120(10):1450-1455, **2012**.

15. Umar-Tsafe, N.T., Thomas Onazi, Asma'u Maifada, Shirematee Baboolal, Prisca Ajiboye, Chukes Egbom, Isiyaku Ahmadu, Kamal Ezekiel, Saad Ahmed, Nasir Sani-Gwarzo, Patrick Nguku. Implementing Data Generation Systems for Customer Service Survey and Other Quality Indicators at the National Tuberculosis and Leprosy Reference Laboratory, Zaria-Nigeria. Oral: Proceedings of the 1st African Society for Laboratory Medicine Conf.@CapeTown, South Africa, 1st-7th December **2012**. Abstract-PG11:30, p169.

16. Umar-Tsafe, N.T., M. Panwal, Patrick Nguku, Ndadilnasiya Waziri, Mansur Gidado, Chukes Egbom, Nicholas Ezati, Augustine Kogoro, Saad Ahmed, Mohammed Shehu. Development of an Effective Internal Quality Control System at the National Tuberculosis and Leprosy Reference (NTBLR) Laboratory, Zaria, Nigeria. A Poster Presentation. Proceedings of the 1st African Society for Laboratory Medicine (ASLM) Conference, Cape Town, South Africa, 1st - 7th December **2012**. Abstract-Poster 165.

17. Umar-Tsafe, N.T., M. Panwal, P. Nguku, N. Waziri, M. Gidado, C. Egbom, N. Ezati, A. Kogoro, S. Ahmed, M. Shehu. Development of an Effective Internal Quality Control System at the National Tuberculosis and Leprosy Reference (NTBLR) Laboratory, Zaria, Nigeria. A Poster Presentation. Proceedings of the 1st African Society for Laboratory Medicine Conference, Cape Town, South Africa, 1st - 7th Dec. **2012**. Abstract-Poster 165.

18. Kabir I Getso and Nasir Umar-Tsafe. Lead Poisoning Crisis in Zamfara State: An Overview (Oral Presentation). *Report of Nigeria FELTP Scientific Symposium*. Chida Hotel, Abuja, 27th - 28th February **2013**.

(b) Selected publications (2000 to Date) continued:

19. Neri, A., J. Roy, C. Dooyema, N.T. Umar-Tsafe, R. Philips, J. Jarrett, K. Caldwell, M.J. Brown. Analysis of a Novel Field Dilution Method for Testing Samples that Exceed the Analytic Range of Point-of-Care Blood Lead Analyzers. *Int. J. Env Health Res.*, p1-11, **2013**. DOI: 10.1080/09603123.2013.857390 (Taylor & Francis).

20. Nasir T. Umar-Tsafe, AT Olayinka, SA Ahmed, PM Nguku, MB Abdullahi, K Sabitu, AI Mamman, MS Shehu, H Yalwa, N Sani-Gwarzo. An Epidemiologic Review on the Lead Poisoning Disaster in Zamfara, Nigeria, 2010-2013. Proceedings AFENET Conference, 17-22 November **2013**, Addis Ababa, Ethiopia. OPA/p104.

21. M Bashir, N Umar-Tsafe, K Getso, IM Kaita, A Nasidi, N Sani-Gwarzo, P Nguku, L Davis and MJ Brown. Assessment of Blood Lead Levels Among Children Aged ≤5 Years - Zamfara State, Nigeria, June-July 2012. *MMWR*, **2014**, 63(15): 325-327.

22. Ajumobi, O.O., A. Tsofo, M. Yango, M.K. Awoh, I.N. Anugbogu, A. Mohammed, N. Umar-Tsafe, M. Suleiman, M. Abdullahi, L. Davis, S. Idris, G. Poggensee, P. Nguku, S. Gitta, P. Nsubuga. High Concentration of Blood Lead Levels Among Young Children in Bagega Community, Zamfara-Nigeria and the Potential Risk Factor. *Pan Afr Med J.* **2014**; 18(Supp 1):1-4.

23. Umar-Tsafe, N.T., I.I. Nda, C.O. Ega, *et al.* The Outbreak of Lead Poisoning in Unguwar Kawo and Unguwar Magiro, Rafi LGA, Niger State, Nigeria, 2015. Oral Presentation Paper. Proceedings of the 3rd National Conference on Environmental Health, PN60:78, **2015**, Ibadan, Nigeria.

24. Kaufman, J. A., M.J. Brown, N.T. Umar-Tsafe, *et al.* Prevalence and Risk Factors of Elevated Blood Lead in Children in Gold Ore Processing Communities, Zamfara, Nigeria, 2012. *Journal of Health & Pollution* Vol. 6, No. 11: 2-8, **2016**.

25. Umar-Tsafe N, T Olayinka A, Ahmed S, S Shehu M, Poggensi G, Habib A, Sabitu K, M Nguku P, Jafiya A, Kachalla M, Bintu Gubio A, Inna Muhammad H, Aliyu S, Idris B, Shehu B, Isah A, Ahmad H, Madaro Y, Usman R, Halilu I, Yalwa H, Kolo H, Waziri E, Gidado S, Dalhat M, J Mwangombe B, Olabiyo R, Oloruntuyi G, Zakariyya Yauri A, A Shinkafi B, Sani-Gwarzo N, Iliyasu Z, Indo Mamman A, S Isah H, Akuyam S, Anetor JI and Jean Brown M (**2019**). The Lead Poisoning Control in Zamfara and Niger States, Nigeria: A 2010 - 2018 Review. *Front. Pharmacol.* Conference Abstract: International Conference on Drug Discovery and Translational Medicine 2018 (ICDDTM '18) "Seizing Opportunities and Addressing Challenges of Precision Medicine". doi: 10.3389/conf.fphar.2019.63.00028.

26. Nazefah Abdul Hamid, Nasir Umar-Tsafe, Nurmawati Syakroni, Habsah Mohamad and Rozita Rosli. (**2021**). *Gracilaria changii* induces cytotoxicity and apoptosis but not genotoxicity *in vitro*. Full manuscript for re-submission to *In Vitro Toxicology* (Elsevier).

27. Umar-Tsafe, N. T., Rosli, R., Mohamad, H., Lajis, N. H. and Lai, L. C. (**2021**). Elucidation of basic mechanisms whereby flavokawin B inhibits the growth of tumour and transformed-normal cell lines. Full manuscript for submission to *Breast Cancer Research* (BioMedCentral).

(H) REFERENCES:

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<p>[2] Dr Nasir Sani-Gwarzo, MBBS, MPH, mni Chief Consultant Epidemiologist/Director (NFELTP) Federal Ministry of Health, Abuja, NIGERIA (Former Medical Epidemiologist @ CDC Abuja, Nigeria) Tel: +234 (0)703 403 2615 E.mail: drqwarzo@gmail.com; drqwarzo@yahoo.com</p>	<p>[5] Professor Dr Rozita Rosli, MSc, PhD Professor of Human Genetics/Dir. Cancer Research Centre for GRM Research / Faculty of Medicine and Health Sciences, Universiti Putra Malaysia 43400, Serdang, Selangor, MALAYSIA Tel: (+60)-3-8947-2310, E.mail: rozita@upm.edu.my</p>
<p>[3] Professor Hassan S Isah, MSc, PhD, FRCPath Department of Chemical Pathology Faculty of Medicine Ahmadu Bello University Zaria, NIGERIA Tel: +234 (0)803 702 4379 E.mail: hsisah2000@yahoo.com</p>	<p>[6] Adjunct Professor Dr Mary Jean Brown, ScD, RN Former Chief, Lead Poisoning Prevention Branch Centers for Disease Control and Prevention (CDC) 4770 Buford Highway NE MS F60 Atlanta, GA 30341, USA Phone: 770-488-7492; Fax: 770-488-3635 E.mail: mjb5@cdc.gov, mjb68@outlook.com</p>

