



NIGERIAN INSTITUTE OF MEDICAL RESEARCH

Research for National Health



2021 ANNUAL REPORT

NIMRNIGERIA



NIGERIAN INSTITUTE OF MEDICAL RESEARCH

2021

ANNUAL REPORT

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Director-General/CEO

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Dr. (Senator) A. O. Mamora
Honourable Minister of State for Health
Federal Ministry of Health



Prof. Babatunde Lawal Salako, FAS
Director-General/Chief Executive Officer
Nigerian Institute of Medical Research

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DIRECTOR GENERAL'S FORWARD



Following the devastating Covid-19 pandemic in the year 2020 that caused havoc in many nations of the world, the year 2021 began with full activities and ended on a very high note. The year was particularly eventful as the preparation of a 5-year Strategic Plan (2022–2026) was completed following the expiration of the previous one in 2021. The 2022–2026 Strategic Plan will enable the Institute to remain focused on its key mandate to improve the

health status of Nigerians through quality research and development. It is also meant to guide the Institute appropriately in responding to the health research priorities of Nigeria as a contribution to the transformation agenda of the Federal Government for national development.

In the past year, the Institute continued to improve on implementing its mandate to conduct research into diseases of public health importance in Nigeria.

Funded projects included the Study of APOLI Gene Variants and the Risk of Kidney Disease in Covid-19 in Nigeria, Safety and Antimicrobial Resistance of Mass Administration of Azithromycin in Children 1-11 months, Integration of Hypertension Management into HIV care in Nigeria: A Task Strengthening Strategy, the HPLC Analysis of the quality of Artemisinin Combination Therapy (ACT) medicines in Nigeria: Malaria Omic correlates of Artemisinin-based therapy

resistance in Nigeria, International epidemiology Databases to Evaluate AIDS (IeDEA), etc.

As was witnessed in the year under review, the Institute played host to scores of University students from many Nigerian Universities across the country and further afield who applied to undertake their Industrial Work Experience. This included National Youth Service Corps (NYSC) members and undergraduate students for Internship and Bench Space for laboratory studies respectively. The students were educated on the mandate of the Institute and the contribution of research to national development.

The Institute's contributions to the Federal Government efforts at addressing some of the greatest disease burdens in the country are palpable. Such diseases are HIV/AIDS, tuberculosis (TB), malaria, hepatitis and other communicable and non-communicable diseases. The Institute's HIV/AIDS programme continues to be among the largest in the country with a cumulative enrolment above 25,000 patients including adults,

pregnant women and children, and with an MTCT rate of less than 1%, loss to follow of 20%, mortality rate of about 3.3% and viral suppression rate of 93-95%.

The Institute's tuberculosis (TB) programme has managed cumulatively more than 7,000 patients since the commencement of the DOTs services with a treatment cure rate above 90%. A total of 133 patients were diagnosed and treated for tuberculosis in 2021 which is an increase from the 119 patients treated in 2020. Of the total TB infections recorded in the year, 15 (11.3%) were co-infected with HIV compared with the figure in 2020 which shows a decrease in TB infection amongst HIV positive individuals.

Hepatitis B and C infections are major causes of morbidity and mortality in the country. Diagnosis of these diseases in Nigeria has been through serological techniques. These techniques only confirm that a patient is infected, but do not give the severity of infection. However, in 2021, NIMR became the first Laboratory in the country to establish capacity for HBV and HCV

viral load assay and genotyping. With these facilities, the laboratory cannot only diagnose cases of Hepatitis B and C infections, but can track the viral load at any period of the infection and help monitor the response of the patient to treatment. Currently, an in-house Hepatitis B diagnostic kit is being developed and this will relieve Nigerian clinicians from the agony of searching for diagnostic kits for case detection purposes. Earlier on in the year, NIMR Scientists developed both Yellow fever and Lassa fever diagnostic kits for clinical use to support disease surveillance in the country. The Institute also commissioned a toxicology laboratory, and the MTN Foundation donated an Oligosynthesizer to the Institute to begin the first ever production of primers and probes in the West African Sub Region to support life science research. A modern E-Library and Administration Complex was completed and commissioned, and a Next Generation Sequencer was acquired, which effectively supported genomic surveillance during the active stages of

the COVID-19 pandemic. The Institute acquired several equipment to support research in various fields as well as 10 field research vehicles, built a 20-bedded Clinical Trial and Observation Centre, and a National Biobank and Emerging Virus disease Laboratory, all courtesy of COVID-19 intervention fund of three (3) billion naira by the Federal Government. Indeed, NIMR made significant contributions to the control of the COVID-19 pandemic, with several research projects capable of contributing to national development currently going on. Thanks to the leadership of the FMOH, NAFDAC, NIPRD and NPHCDA for working together with NIMR to ensure success in some of these projects.

Collaboration and partnership between the Institute, national and international bodies and organisations have continued to grow; many more of our research staff have been offered adjunct academic positions in tertiary institutions in the country, and in addition to the existing several Memoranda of Understanding (MoUs), an MoU with Trinity University,

Sabo-Yaba, Lagos was signed in the reporting year. This is in furtherance to fostering academic and research collaboration with the University. The Institute collaborated with Medical Research Council – Unit, The Gambia (MRCG), West African Node of Excellence for TB, AIDS and Malaria (WANETAM), Institute of Tropical Medicine, Antwerp, Belgium, Tuberculosis Supra Reference Laboratory, Milan, Italy, Institute de Pasteur (IPD), Dakar – Senegal, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Penang – Malaysia, Centre for Discovery and Innovation in Parasitic Diseases, Department of Pathology, University of California, San Francisco, USA, University of Ghana, Legon – Ghana, University of Tokyo, Japan, Federal Medical Centre, Ebute-Metta, Lagos, Nigeria Centre for Disease Control (NCDC), University of Lagos, University of Ibadan, Lead City University, Ibadan, Federal Ministry of Health, African Centre of Excellence for Genomics of Infectious Diseases (ACEGID), Redeemers University, Ede, Osun State, and MTN Foundation.

The Institute also hosted her 10th Scientific Conference, remodelled as Conference on Health Advances, Innovation and Research (CHAIR), with the theme: “Covid-19 Pandemic: Consolidating the Gains and Addressing the Shortfalls”. This is the maiden edition of CHAIR that seeks to direct focus on health advances and innovations from research for national health. The theme reflects our thoughts and perspective to appreciate the gains made in the fight against the SARS-COV-2 virus responsible for this pandemic and consolidate on these gains especially within the health domain. The Conference was well attended by researchers in Nigeria and the diaspora. The Chairman of the Conference was Prof. Ravindra Gupta, Professor of Clinical Microbiology, University of Cambridge, while the Keynote Speaker was Dr. Faisal Shuaib, Executive Director/CEO, National Primary Health Care Development Agency (NPHCDA).

As part of our community service and Corporate Social Responsibility (CSR), the Institute has continued

to create awareness to the Nigerian public on health promotion and disease prevention. In this regard, the Institute commemorated World TB Day, World Malaria Day and World AIDs Day in addition to regularly engaging the media (both print and electronic) to disseminate some of our research findings and their implications on public health.

The welfare of our staff received prompt attention and deserving staff were promoted. We maintained our policy on reward for excellence as an incentive for improved productivity and self-actualization.

Without peace, there will be little or no development; the Institute acknowledges the continued peaceful working environment which perhaps is as a result of good staff motivation. It is our wish and desire that the existing friendly and peaceful work environment in the Institute will be further improved for maximum productivity.

The Institute's main challenge is specific funding for health research which remains inadequate for any robust research that may result in ground breaking outcomes that can contribute to advancement in science

and national development. Meaningful research is capital intensive and, therefore, huge human/financial and infrastructural investment must be committed to it.

In all, the Institute performed better in terms of research activities, laboratory, infrastructural and human capital development. The commitment, dedication and support of the Management and staff of the Institute are highly appreciated as we continue to consolidate on our activities and achievements in the coming year.



PROF. BABATUNDE LAWAL SALAKO, MBBS (Ib), FWACP, FRCP (Lond), FRCP (Edin), mnim, FNAMed, FAS.
Director-General/Chief Executive Officer
Nigerian Institute of Medical Research

WHO WE ARE

- The nation's foremost Institute of Medical Research
- We collaborate with several institutions nationally and internationally to facilitate enabling environment for medical research
- We attract some of the brightest and best brains nationally and internationally in research collaborations

VISION

To be an institution of excellence in basic, applied and operational research for the promotion of National Health and Development in Nigeria.

MISSION

To conduct research into diseases of public health importance in Nigeria and develop structures for the dissemination of research findings while providing the enabling environment and facilities for health research and training in cooperation with the Federal and State Ministries of health and in collaboration with universities, allied institutions and organized private sector nationally and internationally

CORE VALUES

Honesty, Integrity

Leadership

Excellence

Respect, Fairness, Dignity

Teamwork, Innovation

Relevance

Hardwork

Fair Reward and Recognition

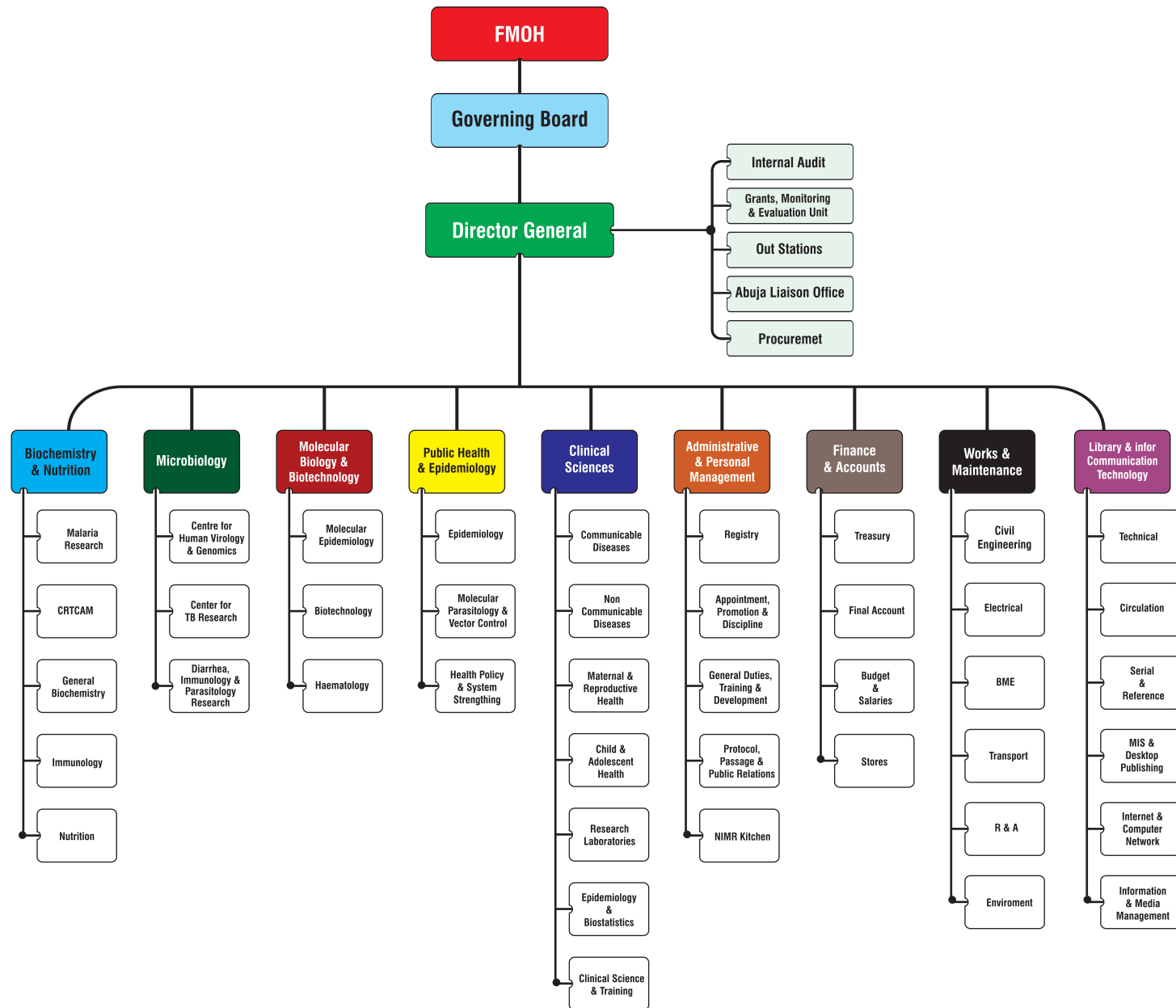
Accountability and Transparency

Communication: Internal and External

Equity



OUR ORGANOGRAM



RESEARCH ADVISORY BOARD MEMBERS

| | |
|---|--------|
| Prof. Oyewusi Gureje (University of Ibadan) | Chair |
| Prof. Babatunde Lawal Salako (DG-NIMR) | Member |
| Dr. Olajide Idris (Commissioner of Health, Lagos State) | Member |
| Prof. Folasade Ogunsola (University of Lagos.) | Member |
| Prof. Sani Aliyu (Former DG-NACA) | Member |
| Prof. Alash'le Abimiku (IHV, University of Maryland, USA) | Member |
| Prof. Ayo M.J. Oduola (VIRF, University of Ibadan) | Member |
| Prof. Ighovwerha Ofotokun (Emory University, Atlanta, USA) | Member |
| Prof. M.B. Shittu (Bayero University, Kano) | Member |
| Prof. Oladosu A. Ojengbede (University of Ibadan) | Member |
| Prof. Oni Emmanuel Idigbe (former DG-NIMR & CEO HUDPHI) | Member |
| Prof. Martin Madu Meremikwu (University of Calabar) | Member |
| Prof. Stanley N.C. Anyanwu (Nnamdi Azikiwe University Teaching Hosp.) | Member |

PRINCIPAL OFFICERS



Prof. Babatunde Lawal Salako, FAS
Director - General / CEO



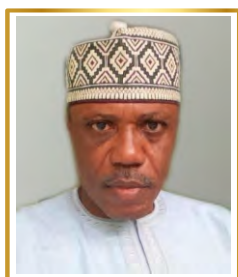
Alh. A.S. Yunusazazzau, mni
Director & HOD
(Administration)



Prof. (Mrs.) O.P. Akinwale
Director of Research (NTDs)
(PH&E Dept)



Engr. E. O. Adedeji, FNSE
Director & HOD
(Works & Maintenance)



Mr. Y. Ogaji, FCA
Director & HOD
(Finance & Account)



Dr. (Mrs.) O. A. Nwogbe
Director & HOD
(Library & Information
Communication Technology)



Mrs. T. Malomo, FCA
Deputy Director & HOU
(Internal Audit)

SENIOR MANAGEMENT COMMITTEE

| | |
|-----------------------------------|--|
| Prof. Babatunde Lawal Salako, FAS | Director-General/CEO |
| Alh. A.S. Yunusazazzau, mni | Director & HOD (Administration) |
| Prof. (Mrs.) N.N. Odunukwe | Director of Research (CSD) |
| Prof. (Mrs.) S.I. Smith, FAS | Director of Research (MB&BT Department) |
| Prof. (Mrs.) O.P. Akinwale | Director of Research (NTDs) PH&E Department |
| Prof. O.C. Ezechi | Director of Research (CSD) |
| Prof. (Mrs.) R. A. Audu | Director of Research & HOD (Microbiology) |
| Engr. E.O. Adedeji, FNSE | Director & HOD (Works & Maintenance) |
| Mr. Y. Ogaji, FCA | Director & HOD (Finance & Accounts) |
| Mr. P.O Ejiga | Director & HOD (Planning) |
| Mrs. C.T. Oparaugo | Director of Laboratory Services (B & N) |
| Dr. (Mrs.) O.A. Nwogbe | Director & HOD (Library & ICT) |
| Mrs. T. Malomo, FCA | Deputy Director & HOU (Internal Audit) |
| Dr. (Mrs.) A.Y. Olukosi | Deputy Deputy & Ag. HOD (B & N) |
| Mr. S.K. Akindele | Deputy Director & Ag. HOD (CD) |
| Dr. (Mrs.) M.A. Sulyman | Chief Research Fellow & Ag. HOD (PH&E) |
| Dr. D.A. Oladele | Chief Research Fellow & Ag. HOD (CS) |
| Dr. (Mrs.) A.Z. Musa | Chief Research Fellow & HOU (G, M & E) |
| Dr. T.A. Bamidele | Senior Research Fellow & Coordinator (MB & BT) |

NIMR 2022–2026 STRATEGIC OBJECTIVES

| S/NO | THEMATIC AREAS | STRATEGIC OBJECTIVES |
|------|--|---|
| 1 | Governance | <ol style="list-style-type: none"> 1. Review 2017–2021 strategic plan, identify gaps, challenges and way forward. 2. Develop, print and disseminate strategic plan for 2022–2026. 3. Conduct annual evaluation of the strategic plan implementation. 4. Advocate for policy and political support for uptake and commercialization of research products. 5. Engage policy and law makers to review the Act that established the Institute. 6. Strengthen and foster new strategic partnerships, networks and collaborations. 7. Develop research, operational and administrative policy frameworks. 8. Advocate for increased budgetary allocation and appropriation for research. |
| 2 | Health Research for National Development | <ol style="list-style-type: none"> 1. Determine research focus in line with national health research priority. 2. Strengthen translational research and clinical trials. 3. Establish and maintain quality improvement system for all laboratories in the Institute. 4. Ensure ethical research compliance and highest standard of health research. 5. Establish functional digital library to support research. 6. Disseminate information on research outputs. |
| 3 | Resource support for Health Research and Development | <ol style="list-style-type: none"> 1. Strengthen the annual national grant writing workshop. 2. Improve number of Direct Grant Awards. 3. Increase adjunct positions for NIMR research staff in Nigerian universities and Internationally. 4. Finalize specific schemes of service for the Institute and ensure approval by Head of Service. 5. Conduct annual promotion exercise. 6. Conduct annual needs assessment and strengthen human capacity for research. 7. Equip and maintain the Central Research Laboratory to international standard. 8. Renovate, maintain and build new structures in tandem with the physical needs of the Institute. 9. Increase annual intramural and extramural research fundings. 10. Strengthen the Grant Management Unit to deliver on its mandate. 11. Maintain networks for public – private partnerships and explore possibilities for research endowments. |
| 4 | Research Innovation Entrepreneurship | <ol style="list-style-type: none"> 1. Strengthen Research, Innovation and Product Development (RIND) Unit to be more responsive to research. 2. Strengthen Corporate Marketing and Communication Unit (CM&CU) to increase Internally Generated Revenue (IGR). |

BIOCHEMISTRY AND NUTRITION DEPARTMENT

INTRODUCTION

The Department of Biochemistry and Nutrition is a multidisciplinary entity that seeks to use cutting edge technologies and sound expertise in basic and translational research in providing impactful outputs via its Units:

- **Biochemistry & Immunogenomics** - focusing on the general biochemical analysis of biological molecules, polymorphisms in red blood-cell related diseases, molecular mechanisms of malaria parasite infectivity and pathogenesis.
- **Centre for Research in Traditional, Complementary and Alternative Medicine (CRTCAM)** - training and conducting research into safety and authenticating efficacy claims and compound testing on selected natural products and active ingredients. The center conducts investigations on toxicology, proximate analysis, efficacy, and elucidation of the mechanism of action of phytochemicals from natural products for communicable and noncommunicable diseases. The Centre's laboratory is equipped with Buchi rotary evaporator, Agilent Gas chromatography-mass spec chromatography, ionization atomic absorption spectrometer, and Agilent 2100 HPLC located in the Central Research Laboratory. *In-silico* Docking of Compounds to Receptor Proteins for

Rational Drug Design. This core uses rigid, semi-flexible, and flexible docking softwares and algorithms to build 3D stereospecific optimized structures against receptor proteins using docking and molecular dynamics softwares. Anticancer drug discovery and infectious disease docking studies are being investigated using this arm of the Department.

- **Immunology** - focuses on the cellular immune responses in some tropical diseases in humans and animals such as performance of malaria antigen detection vs parasite enumeration by microscopy.
- **Malaria Research & Epidemiology** - This unit specializes in surveillance of malaria indices including its comparative prevalence using different methods, molecular markers of drug resistance, therapeutic efficacy studies and implementation studies in Nigeria. This multidisciplinary team conducts WHO standard microscopy training in the diagnosis of malaria. The Institute's HPLC and spectrometry core facilities are used to address drug quality issues, while molecular characterization of other pathogen coinfections with malaria are regularly conducted by this team.

- **Molecular Oncology, Vaccine Design & Diagnostics** – uses basic and translational molecular oncology research thereby providing solutions in oncology research using avant-garde biochemistry, pathology, computational and molecular biology tools. This unit uses bioinformatic and molecular biology tools to investigate candidate gene targets for vaccine development. The team is equipped with bacterial cloning tools, mammalian tissue culture system, shared equipment for sanger sequencing and next generation sequencing using patterned flow cell and rolling circle amplification (RCA). This unit hosts the Institute’s mammalian cell culture laboratory for anticancer drug discovery studies, antivirals, recombinant protein production, and other mechanistic studies. It supports various collaborating institutions in providing cell lines for virus growth, and vaccine development to various pathogens. The Institute’s Flow Cytometry and Zeiss fluorescent microscope is resident here.
- **Non-Communicable Diseases & Cosmetology** – focuses on Research and Evaluation as well as Partnership and Collaborations designed to eliminate dangerous chemicals linked to chronic diseases (Non-communicable diseases) from cosmetics and personal care products. This unit uses biochemical analytical methods (HPLC, AAS, GC-

MS) to assay chemical compounds in cosmetics. It seeks to provide safe alternatives and solutions to the daily topical application of chemicals in cosmetics and personal care products. This team uses public health and social measures (phsm) to sensitize the public on the dangers of these chemicals and, train cosmetologist on the appropriate use of chemicals/natural products.

- **Nutrition** – provides relevant scientific information and conducts investigation in nutritional quality, safety, and associated disorders such as deficiencies of vitamins, minerals, and in-born errors of metabolism.
- **Quality and Improvement Unit** – Focuses on the implementation of a quality management system in the Centre for Research in Traditional Complementary and Alternative Medicine and other Laboratories in the Department.

RESEARCH ACTIVITIES (ONGOING)

- Conducting research into the safety and authenticating efficacy claims and compound testing on selected natural products and active ingredients.
- Phytochemical and Proximate analysis of Herbal products. Characterization of volatile phytochemicals using GC-MS.

- COVID-19: Laboratory analysis on COVID positive participants and serum micronutrients
- Rapid Assessment of the Preparedness of Health Workers in the National Response to COVID-19 or Future Outbreaks in Nigeria
- MALARIA: The HPLC Analysis of the quality of Artemisinin Combination Therapy (ACT) medicines in Nigeria.
- Malaria Omic correlates of artemisinin-based therapy resistance in Nigeria.
- Census of enumeration areas and characterization of Ijede Local Government Development Area, Lagos State, Nigeria
- Assessment of baseline and endline molecular markers of SP resistance in Osun and Ebonyi States in the formative research of the IPTi Effect: Nigeria operational feasibility and effectiveness of IPTi study
- Investigating artemisinin resistance in Nigeria isolates of *Plasmodium falciparum*
- Unravelling Malaria Genome for Malaria Vaccine Development. **NIMR**
- An investigation of the Chemical Constituents of Sanitizers used in Nigeria.
- Anticancer, Antiviral and Antidiabetics Drug discovery from medicinal plants
- *In-silico* docking studies and ADMET analysis of compounds.
- Investigation of miRNA expression and detection in prostate cancer.
- Pharmacogenomics of Docetaxel in Patients with solid tumours.
- Vaccine development by Competent Cloning Strategies and Protein Expression in *E. coli*.
- Providing technical support in areas of bioinformatics and molecular pathology for the NIH U54 Epigenomic Biomarkers of HIV-Associated Cancers in Nigeria (Lagos State).
- Determination of serum levels of interleukin -10 and tumor necrosis factor alpha among school aged children in urban slum co-infected with *Plasmodium falciparum* and intestinal helminth in Lagos State.
- Production of Viral Transport Media (VTM) in collaboration with Microbiology and Biotechnology Department for COVID-19 sample collection for the National team.
- Analysis of heavy metals levels in some water sources and fruits sold in markets using AES
- Developing capacity for GCMS analysis of drugs of abuse in human blood.

ACHIEVEMENTS

- Creation of Centre for Research in Traditional, Complementary and Alternative Medicine (CRTCAM).
- New Animal House was built
- Creation of Tissue Culture Lab;
- Production of Viral transport medium for national use

CAPACITY DEVELOPMENT

Number of Conferences/Workshops /Training Attended: **8**

Number of B.Sc, M.Sc, PhD Students Supervised: **B.Sc: 8; M.Sc: 16; Ph.D: 4**
Number of NYSC/ Industrial Training Students: **NYSC: 6, IT: 101**

COLLABORATIONS (International and National)

Nigerian Universities and Research Institutes, MRC Unit The Gambia at LSHTM, LSTMH, University of Ghana, Legon, University of Tokyo, Japan, Nigerian Council of Physicians of Natural Medicine, Pax Herbal Clinic and Research Laboratory, Centre Pasteur du Cameroon, Yaounde, Saro Lifecare Nig. Ltd. Health, Environment and Development Foundation, Nigeria.

GRANT/FELLOWSHIP AWARDS

- West African Network for TB, AIDs and Malaria (WANETAM 3): Malaria work package (EDCTP) Co PI: Dr. Olukosi.
- World Health Organization: A pilot multisectoral intervention for controlling malaria vectors, mitigating insecticides resistance and assessing wash facilities at health care units in selected costal and Sahelian west African countries. Dr. Olukosi.
- MRC Unit The Gambia at LSHTM: Molecular profiling of *Plasmodium falciparum* parasite across the six geopolitical zones in Nigeria Dr. Olukosi.
- NIMR: Census of enumeration areas and characterization of Ijede local

government development area Lagos state, Nigeria Dr. Olukosi.

- Malaria Omic correlates of artemisinin based therapy resistance in Nigeria. (EDCTP) Dr. Olusola Ajibaye.
- A Novel non-kelch-13 Artemisinin resistance marker: Investigating Association with Artemisinin Resistance in comparison with Kelch-13 propeller gene among *Plasmodium falciparum* malaria subjects in Lagos, Nigeria.-WANETAM GRANT. Dr. Olusola Ajibaye.
- Novel *Plasmodium falciparum* biomarker: Immunogenetic Investigation of Diagnostic Efficacy Targeting Development of a Population-Specific malaria point-of-care device in Nigeria in a COVID-19 pandemic. (NIMR grant) Dr. Olusola Ajibaye.
- Investigating artemisinin resistance in Nigerian isolates of *Plasmodium falciparum*. (EDCTP) Kolapo Oyebola.
- Health, Environment and Development Foundation- Toxicological and Efficacy Studies of *Picralima nitida* as Anticancer and Antidiabetics Agent in Animal Model. Dr OO Aina

CHALLENGES

1. Fund to improve on genetic profiling and cryo-archiving to ensure that cell lines are mycoplasma free, so that NIMR can be a national reference center for tissue culture studies.
2. Need to have paid services in the Department to boost revenue.

3. Need to revamp the flow cytometer.
4. Complete our CO2 set-up for incubators
5. Acquisition of one more incubator for Plasmodium culture.
6. Offices and lab space for members of staff are inadequate

WAY FORWARD

- Submit applications for specific grant calls for possible funding of on-going and new projects.
- Provide research support services in basic medical research involving mammalian cell line studies and flow cytometry
- Validate and develop flow cytometry and qPCR testing protocols for leukaemia in collaboration with Hematologists and Pediatric oncologists
- Availability of funds and Infrastructural development through grants
- Support for Initiatives
- Mechanisms for interdepartmental collaboration
- Provision of offices and office tools

2022 WORK PLAN

1. *In vivo* ACT (AL) DTES in Lagos, Evaluation of effectiveness of techniques for parasite detection.
2. Investigation of new qPCR and cyflow assays for parasite detection and discrimination.
3. *In vitro* parasite susceptibility, ring survival and invasion assay studies.
4. A novel *plasmodium falciparum* biomarker: immunogenetic investigation of diagnostic efficacy

targeting development of a population-specific point-of-care device in nigeria for malaria and COVID-19.

5. Malaria Omic correlates of artemisinin-based therapy resistance in Nigeria.
6. HPLC analysis of antimalarial drugs circulating in Lagos State.
7. Conduct research into the safety and authenticate efficacy claims and compound testing on selected natural products and active ingredients.
8. Phytochemical and Proximate analysis.
9. Training of traditional medical practitioners on the role of safety and efficacy of alternative medicine.
10. Cellular Immune responses in some tropical diseases in humans and animals.
11. A pilot multisectoral intervention for controlling malaria vectors, mitigating insecticides resistance and assessing WaSH facilities at health care units in selected costal and sahelian West African countries.
12. A randomised controlled trial: anti-malaria prophylactics for pregnancy (AMPPOP) clinical trial (in collaboration with clinical sciences department).
13. Molecular profiling of *Plasmodium falciparum* parasite across the six geopolitical zones in Nigeria.
14. Census of enumeration Areas and Characterization of Ijede Local Government Development Area, Lagos State, Nigeria.
15. Vaccine Design and development
16. Continuous production of VTM

17. Anti-COVID rational drug design from medicinal plants.
18. Cloning and purification of recombinant proteins
19. Karyotyping for Chromosome services
20. Anticancer drug research.
21. Goat Serum production
22. Initiation of Cosmetic Training Classes
23. Research based Seminars and workshops on key strategic days
24. Primary Care through medical outreach to identify existing chronic diseases in the communities
25. Relationship between nutrition, health and infection; Nutritional status determines outcome of infection.
26. Street foods and water analyses in Lagos State
27. Nutrition Education: Staff of NIMR
28. Training: Nutrient analysis protocol
29. Workshop: Nutrition Advocacy to schools, teachers and Heads, Screening of Adolescents for Kidney Disorders.
30. Implementation of Quality Management System in Centre for Alternative & Traditional Medicine Unit
31. Development of Centre of excellence for Malaria Microscopy.

CLINICAL SCIENCES DEPARTMENT

BACKGROUND

The Clinical Sciences Department was established in 2002 as the Clinical Sciences Division. It has undergone various changes over the years to its present status as the Clinical Sciences Department (CSD). This report reflects the year 2021 activities of the CSD which are focused on research, service delivery and capacity development.

The Department continues to conduct operational research in addition to the comprehensive care given to patients enrolled in the HIV, TB and Hepatitis Programmes of the Institute. Some of the research activities of the CSD were disseminated at the November, 2021 NIMR Scientific Conference on Health Advances, Innovation and Research (CHAIR).

The Implementing Partner for our HIV/AIDS services, Family Health International (FHI 360) supported and contributed to the activities of the Department in 2021. Our HIV/AIDS Programme continues to be among the largest and the best in the country with cumulative enrolment above

25,000 including adults, pregnant women and children and a mother to child transmission (MTCT) rate of 0.0% in 2021.

This report summarizes the structure and activities of the Clinical Sciences Department in 2021, which contributed to the realization of the NIMR overall mandate of Research for National Health.

Administration

The Department functions in three broad areas of Research, Programme Support and Projects, and Clinical and Laboratory Services. There are three Research Centres and nine administrative subunits (Clinical, Administrative, Medical Records, Data Management, Counseling, Pharmacy, DOTS, Nursing and Accounts), each with a Unit Head that reports directly to the Head of Department. The Department also works very closely with the Centre for Human Virology and Genomics (CHVG) and the Centre for Tuberculosis Research (CTBR), both of the Microbiology Department. These Centres provide laboratory support for the HIV and TB Programmes of the CSD.

Table 1: Research Centres and Administrative Units in CSD

| | |
|--|--|
| <p>A. Research Units and Members</p> <p>Centre of Excellence in Child and Adolescent Health Research (CECAR)</p> <ol style="list-style-type: none"> 1. Dr. Agatha N. David 2. Dr. Abideen O. Salako 3. Dr. Titilola A. Gbajabiamila 4. Dr. Agatha E. Wapmuk <p>Centre for Reproductive and Population Health Studies (CRPHS)</p> <ol style="list-style-type: none"> 1. Prof. Oliver C. Ezechi 2. Dr. Aigbe Greg. Ohihoin 3. Dr. Paschal M. Ezeobi 4. Pharm. Sabdat O. Ekama 5. Ms. Ifeoma E. Idigbe 6. Dr. Adesola Zaidat Musa <p>Centre for Research in Non - Communicable and Metabolic Diseases (CRenMD)</p> <ol style="list-style-type: none"> 1. Prof. Nkiruka N. Odunukwe 2. Dr. David A. Oladele 3. Dr. Esther N. Ohihoin 4. Dr. Jane O. Okwuzu | <p>B. Administrative/Service Units</p> <p>HOD: Dr. David A. Oladele</p> <ol style="list-style-type: none"> 1. Pharmacy Unit: Pharm Ebiere C. Herbertson 2. Nursing Unit: Mrs. Deborah D. Oladipo 3. Counseling Unit: Ms. Ifeoma E. Idigbe 4. Medical Records: Mrs. Mary Enejoh 5. DOTS Clinic: Mrs. Rita O. Nwosu 6. Data Management: Dr. Adesola Z. Musa 7. Research Laboratory: Dr. Jane O. Okwuzu 8. Dept. Secretary: Ms. Unwana A. Asuquo 9. Finance Unit: Mr. Sunday A. Adekoya <p>C. Research/Training/Service Support</p> <ol style="list-style-type: none"> 1. Research/Training Coordinator: Dr. A.G. Ohihoin 2. Site Coordinator: Dr. Paschal M. Ezeobi 3. Admin. Officer: Mrs. Nmachukwu C. Nwofor |
|--|--|

There were 14 Research Fellows and 85 Support Staff in the CSD as listed in Table 2 below.

Table 2: Staff Cadre Strengths in CSD

| S/N | Staff Category | No of Staff | S/N | Staff Category | No of Staff |
|--------------|------------------|-------------|-----|---------------------|-------------|
| 1. | Research Fellows | 14 | 8 | Records | 6 |
| 2. | Medical Officers | 4 | 9 | Research Laboratory | 3 |
| 3. | Pharmacists | 5 | 10. | DOTS | 1 |
| 4. | Nurses | 8 | 11. | Admin. | 7 |
| 5. | Counsellors | 6 | 12. | NYSC Members | 10 |
| 6. | Data Officers | 6 | 13. | Volunteers | 18 |
| 7. | Accounts | 2 | 14 | Project Staff | 9 |
| TOTAL | | | | | 99 |

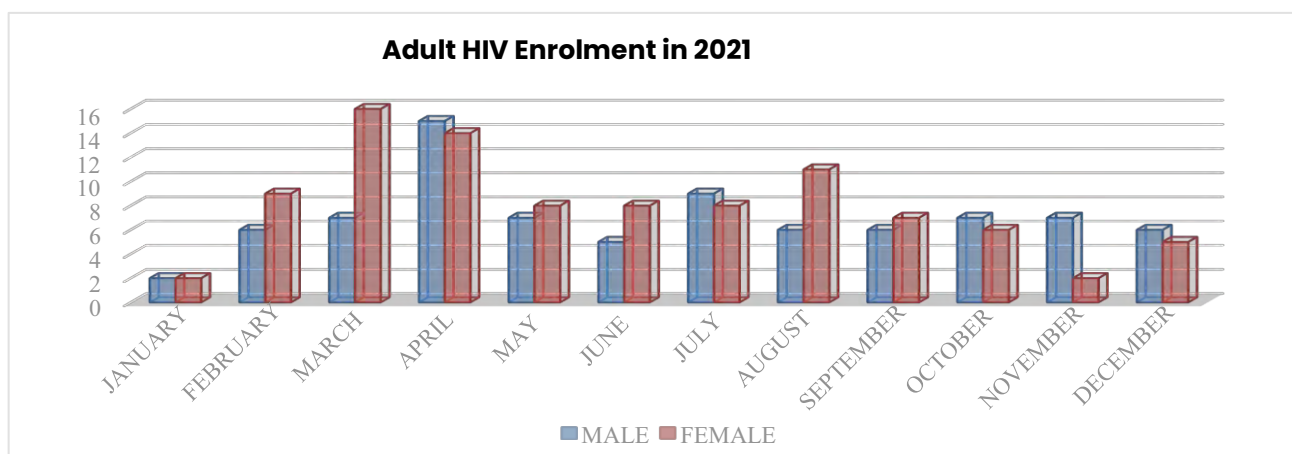
| | | | | |
|-----|---|---------|-----------------------|--------------------|
| 13. | The Nigerian Cardio-Metabolic Genomics Study (NicGen): A Nation-wide cross-sectional study of the genetic epidemiology of cardio metabolic and related diseases in Nigeria. | Ongoing | NCD-GHS Consortium | Dr. David Oladele |
| 14. | The Lagos COVID-19 Long Haulers Cohort Study (COLHACS Study) | Ongoing | NIMR | Dr. David Oladele |
| 15. | Safety And Antimicrobial Resistance Of Mass Administration Of Azithromycin In Children 1- 11 Months In Nigeria [SARMAAN PROJECT] | ongoing | Bill Gates Foundation | Prof. O. C. Ezechi |

HIV Treatment Programme

The HIV treatment programme of the Department which is one of the best in the country involves a multidisciplinary team which has provided care for HIV infected patients from 2004 till date. The cumulative enrollment of HIV positive persons since inception of the Clinic till 2021 is 26,442 while a total of 6,867 HIV exposed infants were managed till 18 months of age. A total

number of 191 HIV positive patients were enrolled into care from Jan-Dec., 2021 comprising of 184 adults and 7 paediatric patients. The HIV Clinic also renders PMTCT (prevention of mother to child transmission of HIV) services and a total of 88 HIV positive pregnant women were enrolled in the year. The enrollment pattern by gender and on monthly basis is depicted in the figures below.

Figure 1: New Adult Enrolment



Research Activities

Research activities of the CSD are coordinated by employing a multidisciplinary approach. The Research Projects are presented in the table below.

Table 6: Research Projects in the CSD and Collaborators

| No | Title | Status | Funder | PI |
|-----|--|---------|-------------------------------|--------------------|
| 1. | EN-RTP: Emory Nigeria Research Training Programme | Ongoing | NIH | Prof. O. C. Ezechi |
| 2. | Innovative Tools to Expand Youth-Friendly HIV Self Testing | Ongoing | NIH | Prof. O. C. Ezechi |
| 3. | AMPROP: Antimalarial Prophylaxis for Pregnancy | Ongoing | NIMR | Dr. A. G. Ohioin |
| 4. | Acceptability of Flavoured Zinc in the Management of Diarrhoea in children: An interventional study | Ongoing | Emzor | Dr. A. N. David |
| 5. | Assessment of Vaccine Effectiveness of the OxfordAstraZeneca vaccine Among Health Workers in Nigeria: A Prospective Cohort Study | Ongoing | NIMR | Dr. David Oladele |
| 6. | Integrase Inhibitor resistance during failure of antiretroviral therapy | Ongoing | Cambridge University | Dr. David Oladele |
| 7 | A multicenter double blind randomized group clinical trial involving graphene impregnated latex condoms | Ongoing | | Dr. A. G. Ohioin |
| 8 | Health outcomes and immunologic Responses of HIV exposed Uninfected Children in Lagos, Nigeria (HEIR Study) | Ongoing | | Dr. A. N. David |
| 9. | Management of Malaria in African Countries: A prospective non-interventional cohort study | Ongoing | Novartis | Dr. A. N. David |
| 10. | Integration of Hypertension Management Into HIV Care in Nigeria: A Task Strengthening Strategy (TASSH Project) | Ongoing | NIH | Prof. O. C. Ezechi |
| 11. | leDEA International epidemiology Databases to Evaluate AIDS | Ongoing | NIH | Prof. O. C. Ezechi |
| 12. | Study of APOL1 Gene Variants and the Risk of Kidney Disease in COVID-19 in Nigeria | Ongoing | North Western University, USA | Dr. David Oladele |

Table 4: New Adult Enrolment

| | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC |
|---------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|
| MALE | 2 | 6 | 7 | 15 | 7 | 5 | 9 | 6 | 6 | 7 | 7 | 6 |
| FEMALE | 7 | 9 | 16 | 14 | 8 | 8 | 8 | 11 | 7 | 6 | 2 | 5 |
| TOTAL | 9 | 15 | 23 | 29 | 15 | 13 | 17 | 17 | 13 | 13 | 9 | 11 |

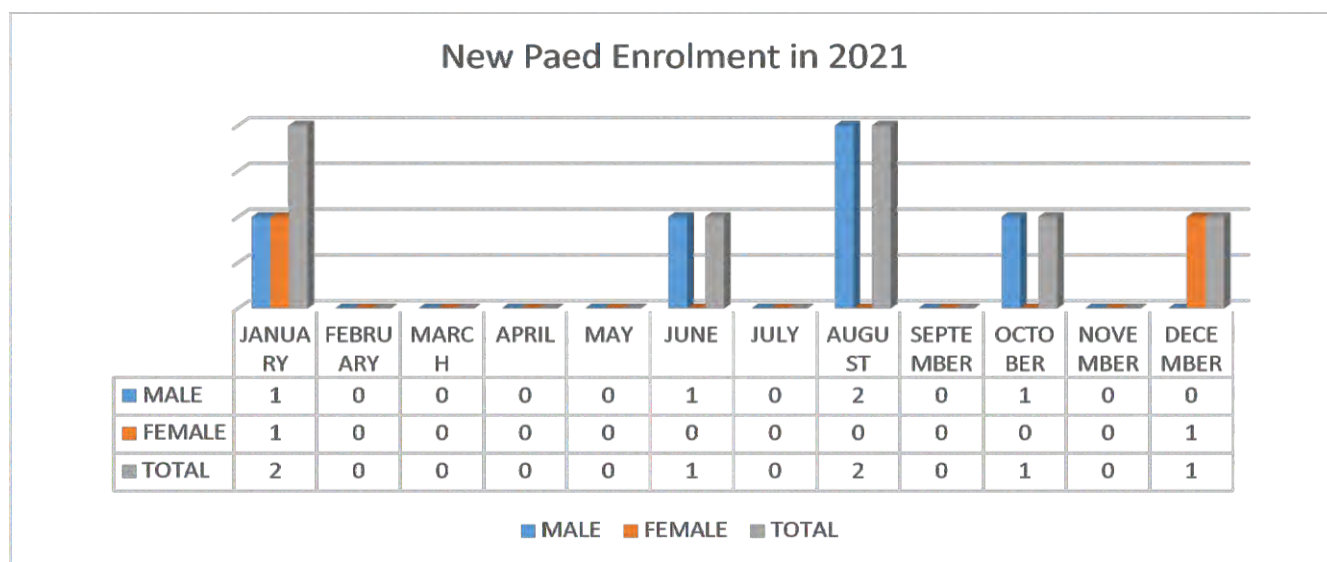


Figure 2: New Paediatric Enrolment

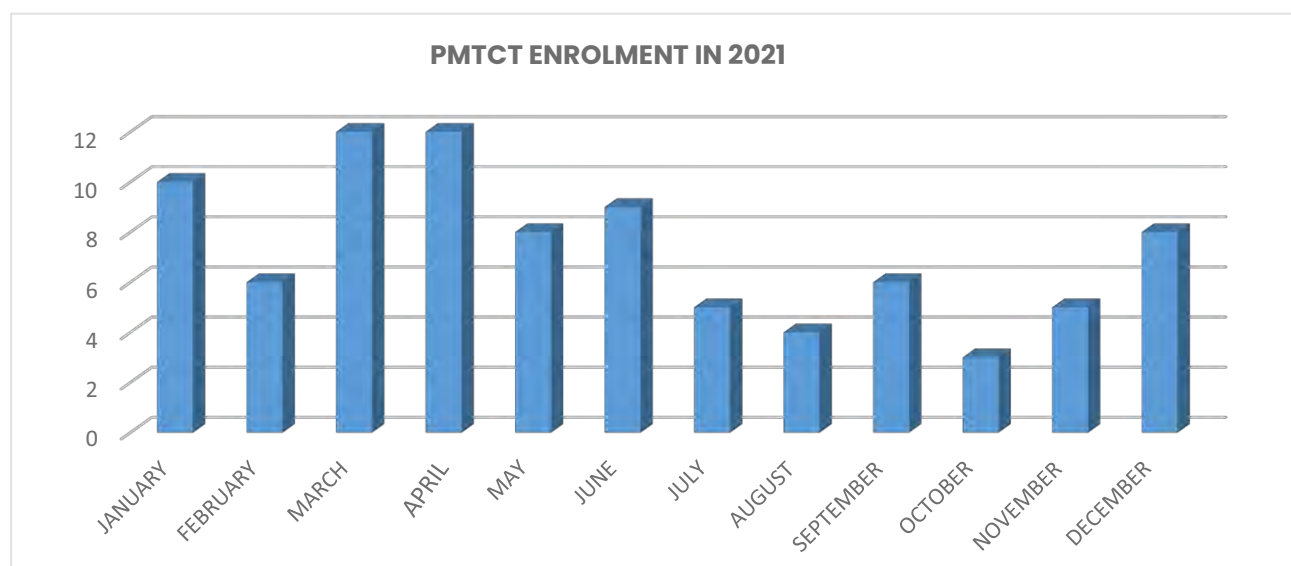


Figure 3: New PMTCT Enrolment

Table 5: New PMTCT Enrolment

| MONTH | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC |
|--------|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|
| NUMBER | 10 | 6 | 12 | 12 | 8 | 9 | 5 | 4 | 6 | 3 | 5 | 8 |

Tuberculosis Treatment Programme

A total of 133 patients were diagnosed and treated for tuberculosis in 2021 which is an increase from the 119 patients treated in 2020. Of the total TB infections recorded in the year, 15 (11.3%) were co-infected with HIV which

shows a decrease in TB infection amongst HIV negative individuals when compared to the year 2020. The table and bar chart below show the number of TB cases managed in 2021.

Table 6: New TB Infections

| | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC |
|---------------|----------|----------|-----------|-----------|----------|----------|-----------|-----------|-----------|-----------|-----------|----------|
| MALE | 2 | 3 | 10 | 11 | 6 | 5 | 6 | 8 | 6 | 9 | 4 | 4 |
| FEMALE | 0 | 5 | 7 | 4 | 1 | 2 | 7 | 9 | 8 | 6 | 6 | 4 |
| TOTAL | 2 | 8 | 17 | 15 | 7 | 7 | 13 | 17 | 14 | 15 | 10 | 8 |

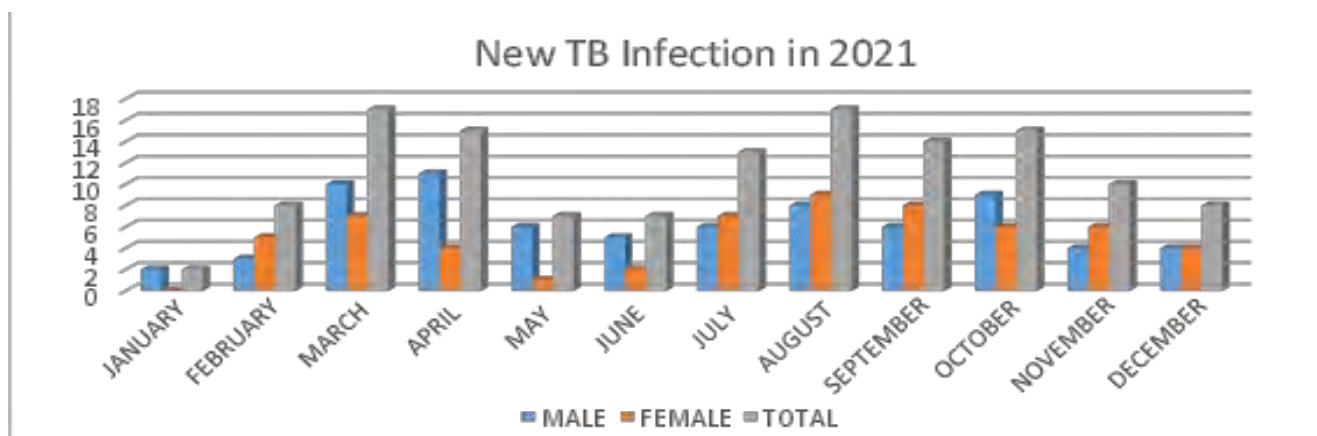


Figure 4: New TB Infections

Events and Programs

The Department had a one-day retreat at the beginning of the year to deliberate on the plans and activities of the Department for the year in line with the strategic Plan and towards actualization of the NIMR mandate of Research for National Development. The ALHIV Support Group activities including the Clinic take place on the 2nd Saturday of the month. On such days, issues pertaining to adolescence, education, career and living successfully with HIV are discussed. Resource persons are also invited to train them in various skills that could result in possible financial empowerment.

Staff Retirement

A senior member of the research staff of the CSD, Dr. Dan Ifeanyi Onwujekwe retired from service after meritorious years of work in the Institute.

Achievements

1. Construction of the Clinical Observation Center for Randomized Clinical Trials (Almost ready-pride of NIMR)
2. 12 Sponsored research projects (including 4 NIH funded research)

Postgraduate Training

Table 8: Staff on Postgraduate Training

| S/N | Name of Staff | Type of Programme | Specialty | Status |
|-----|-------------------|-------------------|-----------------------|---------|
| 1. | Dr. A. N. David | MPhil/PhD | Public Health | Ongoing |
| 2. | Dr. A. G. Ohioin | PhD | Translational Science | Ongoing |
| 3. | Dr. D. A. Oladele | PhD | Public Health | Ongoing |
| 4. | Dr. P. M. Ezeobi | MPhil/PhD | Public Health | Ongoing |

3. Increased numbers of proposals developed and capacity building in grant writing
4. Increased numbers of publications
5. Initiation of differentiation model of HIV Care using Dispatch rider for ARV delivery
6. The ART Clinic of the CSD continues to be one of the most user-friendly HIV treatment and care facilities in the country.
7. The TB DOTS Clinic of the CSD has recorded high cure rates for tuberculosis in Lagos State.
8. Dedicated members of staff of the Department.

Trainings

In order to attain the goal of maintaining highly trained and competent staff in various disciplines, the Department supports staff to acquire relevant additional training necessary for career progression. It also accommodates internship training; youth service program, clinical residency training as well as training of researchers in the Department's areas of competence.

| | | | | |
|-----|------------------------|-------|-------------------------------------|-----------|
| 5. | Dr. T.A. Gbaja-Biamila | PhD | Public Health | Ongoing |
| 6. | Dr. A. O. Salako | MSc | Public Health & Global Child Health | Ongoing |
| 7. | Dr. A. E. Wapmuk | FMCPH | Public Health | Ongoing |
| 8. | Mrs. S. O. Ekama | PhD | Pharmaceutics | Ongoing |
| 9. | Dr. O. O. Odubela | PhD | Public Health | Ongoing |
| 10. | Dr. P. N. Ezemelue | PhD | Environmental Toxicology | Ongoing |
| 11. | Ms. I. E. Idigbe | PhD | Medical Sociology | Ongoing |
| 12. | Mrs. E. C. Herbertson | PhD | Clinical Pharmacy | Ongoing |
| 13. | Mr. M. O. Chidi | MSc | Pharmaceutical Chemistry | Completed |
| 14. | Mrs. S. T. Adaba | MSc | Cell Biology and Genetics | Ongoing |

National Youth Service Programme

Table 9: NYSC Members in 2021

| S/N | Name | Designation | Programme |
|-----|-------------------------|----------------|-----------|
| 1. | Dr. Openifoluwa Adebayo | Medical Doctor | NYSC |
| 2. | Dr. Ebubechukwu Ezeozue | Medical Doctor | NYSC |
| 3. | Ms. Stephanie Usen | Pharmacist | NYSC |
| 4. | Ms. Chinazor Arinze | Pharmacist | NYSC |
| 5. | Ms. Vivian Christopher | Pharmacist | NYSC |
| 6. | Ms. Omotayo Odulele | Pharmacist | NYSC |
| 7. | Ms. Salma Saeed | Pharmacist | NYSC |
| 8. | Ms. Marvellous Uzor | Pharmacist | NYSC |
| 9. | Ms. Joy Ogunwale | Pharmacist | NYSC |
| 10. | Ms. Dorcas Odejobi | Nurse | NYSC |

Specialized Clinic Services

The Department offers specialized clinic services to members of staff and their families as well as the general public. These specialized services include family planning, cervical and breast cancer screening, fertility treatment, hepatitis vaccination/

management and other gastroenterology diseases. Other specialized clinics are the haematology as well as paediatrics and child health.

The adolescent clinic is also delivered by the CSD.

Table 7: Specialty Clinic Schedule

| Specialty Clinic | Day of the week | Consultant |
|---|---------------------------|---|
| Haematology | Monday | Prof. N. N. Odunukwe |
| Paediatrics and Child Health | Tuesday | Dr. A. N. David |
| Hepatitis & Gastroenterology Clinic | Monday, Wednesday, Friday | Dr. P. M. Ezeobi |
| Hypertension / Nephrology / Cardiology Clinic | Tuesday | Prof. B. L. Salako Dr. E. N. Ohihoin |
| Gynaecology and Women's Health | Thursday | Prof. O. C. Ezechi Dr. A. G. Ohihoin |
| Adolescent Clinic | 2nd Saturday of the month | Dr. A. N. David |

Research Support Laboratory

The Research Support Laboratory of the Department offers laboratory support for the research activities in the Department. It also offers laboratory services to patients attending the specialist clinics. The laboratory has capacity for haematologic, parasitological and clinical chemistry analyses and is manned by a Consultant Haematologist, one Parasitologist, one Medical Laboratory Scientist, and one Science Laboratory Technologist.

collation and analysis of patient information since inception of the Clinic. The records of over 25,000 patients are stored in the database for accessibility to authorized personnel. The Unit has capacity to develop research tools and make data available for research using statistical tools and programs. The Unit works closely with the Monitoring & Evaluation and ICT Units of the Institute. The Unit accommodates all data personnel in the same office to ensure speedy and efficient services.

Data Management

The Data Management Unit has been responsible for electronic data collection,

Challenges

- Manpower shortages in vital areas
 - Inadequate staff
 - Need for nurse researcher, clinical psychologist, nutritionist on staff
- Infrastructural Challenges:
 - ART Clinic needs urgent attention
 - Acute shortage of computers for EMR at the ARV Clinic
 - Needed equipment: computers, air conditioners, laboratory supplies
 - The conduct of Departmental activities in the waxing and waning waves of the COVID pandemic. This has significantly affected services leading to modification of services.
 - The fluctuating support received for the HIV program from our implementing partners, the FHI 360.

Way Forward

The year 2021 was successful in spite of challenges. We look forward to improve in our activities in the year 2022.

Plans for 2022

The Department plans to intensify research activities in 2022. This will be achieved through:

- Strengthening of the Departmental seminars and research sessions and ensuring the integration of its Adjunct Researchers/Professors in all CSD activities to enhance human capacity development and research output.
- Younger researchers and scientists will continue to be paired with the more experienced researchers for mentorship.
- Continue to advocate for infrastructural development and employment of needed staff.
- Aggressively pursue more scientific publications and continue the modification and improvement of our mode of service delivery to satisfy the needs of our patients and clients.

MICROBIOLOGY DEPARTMENT

INTRODUCTION

Microbiology Department consists of 3 Centers and a new Unit was created in the course of the year. They are: Center for Human Virology and Genomics (CHVG), Center for Tuberculosis Research (CTBR), Center for Infectious Disease Research (CIDR) and **Production Unit**. CHVG and CTBR are both National Reference Labs with ISO 15189 accreditation for 16 assays.

The Department is made up of 17 Research Fellows, 36 support and 46 project staff, as well as 4 Adjunct Professors and 1 Consultant Research Professor. Generally, laboratory and office infrastructure in the Department were improved upon during the year. The Department is focused on research and innovation, specialized diagnostic services as well as trainings.

RESEARCH ACTIVITIES (COMPLETED & ONGOING)

Ongoing Research Activities:

1. Characterization of emerging & re-emerging transfusion transmitted diseases
2. Validation of the Yellow fever and Lassa fever kits, using the WHO pre-qualified laboratory criteria and format.
3. Sequencing of Tuberculosis samples - REST Hub Survey
4. Viral Hemorrhagic Fever and their reservoirs
5. COVID-19 Sequencing among travelers - GESIT AHF Grant
6. MDR-TB Surveillance
7. Whole Genome sequencing for investigation of MTBC diversity & MDR-TB resistance prediction in Nigeria
8. Genomic Information Surveillance on Drug-resistant *Mycobacterium tuberculosis* isolates from Nigeria/ TB-Portal
9. Evaluation of GeneXpert MTB/RIF for Detection of *Mycobacterium tuberculosis* and Resistance to Rifampicin among Presumptive TB Cases in Lagos State
10. Prevalence and drug susceptibility profile of non-tuberculous mycobacteria infections among cases of bronchopulmonary disorder in Lagos State
11. Bacterial infections in blood stream among blood donors
12. Microbial analysis of sachet water sold in Lagos State
13. Investigation of waste-water canals as a means of tracking the epidemiology of SARS-COV-2 and other pathogens of public health importance in Lagos State
14. Comparative metagenomics analysis of vaginal microbiome of women living with HIV
15. Environmental assessments of antimicrobial resistance genes (ARGs) and antimicrobial resistant bacteria (ARB) from waste effluents and soil of livestock farms in Lagos State.

COMPLETED RESEARCH ACTIVITIES:

1. Evaluation of HPV genotype assay using an automated extraction and PCR all-in-one instrument.
2. COVID-19 household seroprevalence survey in Lagos, Sokoto and Delta States, Nigeria
3. Plasma and PBMC repository to elucidate the immune and cytokine profile of SARS-CoV-2 infected Nigerians-Lagos subset.
4. Development of Yellow fever and Lassa fever PCR detection kits
5. Association between mitochondrial DNA levels, HIV replication and HAART genotoxicity; implications for better HIV management
6. Diagnosis of TB and management of paediatric TB
7. Bioprospecting for antituberculous potentials of culturable marine actinomycetes from Lagos lagoon sediments
8. Molecular Epidemiology of TB
9. Study on the evaluation of respiratory tract bacterial co-infections with COVID-19 severity in Lagos, Nigeria
10. A survey of antimicrobial resistance burden in Lagos State
11. Implementation of antimicrobial stewardship programmes in healthcare facilities in Lagos State: a needs assessment
12. A national survey of public awareness of antibiotic resistance and antibiotic prescribing behavior among medical practitioners in Nigeria

13. A study on foodborne *Clostridium* species in Lagos State

ACHIEVEMENTS

- Joseph Shaibu developed two test kits: Lassa Fever Virus and Yellow Fever Virus qPCR
- SARS CoV-2 Detection Assay (SCODA) developed the previous year was sold out
- CHVG was designated as WHO national HIVDR laboratory
- Responded to Yellow Fever and Cholera outbreaks in Delta State in collaboration with the following Departments: Public Health and Epidemiology, Biochemistry and Nutrition as well as Molecular Biology and Biotechnology
- Conducted COVID-19 serosurveys in Sokoto and Delta States in collaboration with Clinical Sciences Department and Monitoring & Evaluation Unit.
- Sustained routine sequencing of SARS-CoV-2 in collaboration with Central Research Laboratory and African Center of Excellence for Genomics of Infectious Diseases (ACEGID)
- Some of our staff distinguished themselves in different endeavours namely:
 - Dr. Olufemi Samuel Amoo - completed PhD
 - Dennis Abuh, Emelda Chukwu, Uche Igbasi, Gideon Liboro, Mariam Adetunji - completed FMLSCN
 - Fehintola Ige - emerged the junior researcher for 2021 at NIMR Conference
 - Dr. Azuka Okwuraiwe - emerged best session presenter at NIMR Conference

- Dr. Emelda Chukwu – emerged best session presenter at NIMR Conference

CAPACITY DEVELOPMENT

- Number of Conferences/Workshops/Trainings Attended: 64
- Number of B.Sc., M.Sc., PhD students supervised: 15
- Number of NYSC/Industrial Training Students: 146

COLLABORATIONS AND PARTNERSHIPS (INTERNATIONAL AND NATIONAL)

International Collaborators

- Institute de Pasteur (IPD), Dakar, Senegal
- Family Health International (FHI360)
- Clinton Health Access Initiative (CHAI)
- Emory University
- Medical Research Council–Unit, The Gambia (MRCG)
- Thermofisher
- US–CDC
- West African Node of Excellence for TB, AIDS and Malaria (WANETAM)
- Institute of Tropical Medicine, Antwerp, Belgium
- Tuberculosis Supra Reference Laboratory, Milan, Italy
- Tuberculosis Supra Reference Laboratory, Cotonou, Benin

National Collaborators

- Federal Medical Centre, Ebute–Metta, Lagos
- Nigerian Centre for Disease Control (NCDC)

- African Centre of Excellence for Genomics of Infectious Diseases (ACEGID), Redeemers University, Osun State
- Society for Family Health (SFH)
- Life Bank Nigeria
- University of Lagos, Lagos State
- University of Ibadan, Oyo State
- University of Ilorin, Kwara State
- Lead City University, Ibadan, Oyo State
- Federal Ministry of Health
- National Tuberculosis and Leprosy Programme Control (NTBLPC)
- Institute of Human Virology (IHVN) Nigeria
- Family Health International(FHI 360)
- Lagos State Tuberculosis Control Programme
- Lagos Mainland Hospital, Yaba, Lagos
- Novartis Group

GRANTS/FELLOWSHIP AWARDS

- Dr. Olufemi Samuel Amoo
 - ENRTP grant award
 - SfAM New Lecturer Research Grant
- Dr. Emelda Chukwu
 - Novartis Training Grant Award for AMR project
 - Keystone symposia conference attendance award
 - WANETAM III workshop attendance travel grant
- Dr. Davies–Bolorunduro
 - SfAM International Capacity Fund
- Dr. Nneka Onyejebu
 - WANETAM–3 Grant

- Dr. Chika Onwuamah
 - Johnson & Johnson award for HIVDRT
 - GEIST AIDS Healthcare Foundation Grant – COVID-19 Sequencing among travellers
- Prof Rosemary Audu
 - ACDC award for COVID-19 serosurvey for Sokoto State
 - NCDC award for COVID-19 serosurvey for Delta State

NIMR GRANT AWARD

- Junior Category Grant – Dr. Sam Amoo.
- Innovative Grant – Joseph Shaibu, Prof Rosemary Audu
- Project Development Grants Program (PDGP) for Junior Category – Kunle-Ope C.N
- Post-doc Training Grant – Dr. Davies-Bolorunduro FO
- Pre-doctoral award – Toyin Awoderu
- COVID-19 Intervention Grant award – Audu RA, Onwuamah CK, Amoo OS, Chukwu E, Davies-Bolorunduro, Ige FA, Afocha E, Enwuru C

CHALLENGES

- Inability to sell and obtain NAFDAC registration for innovations
- Strike action, resulting in unavailability of key personnel
- Need for more biosafety cabinets and calibration of same

- Inadequate technical staff
- Inadequate office and store space
- Sub-optimal functioning of Biosafety Level 3 (BSL 3) Laboratory

WAY FORWARD

- Address issues with sale of innovations and NAFDAC registration of same
- Purchase more biosafety cabinets
- NIMR to develop calibration plan for BSC not supported by IPs
- Employ project staff to sustain the enlarged scope of research and services
- Create more office and storage space
- Service HVAC system of BSL 3 laboratory

WORK PLAN: 2022

- Develop strategic plan for next five years (2022-2026)
- Strengthen capacity for proposal and manuscript writing
- Attract more research collaborators
- Expand scope for ISO 15189 accreditation
- Elect new heads of centers
- Have Production Unit function optimally
- Improve revenue generation through operation of business model for services
- Strengthen both internal and external trainings
- Have more team building activities.



Launching of Lassa Virus and Yellow Fever Virus qPCR in September.



Award recipients at the 2021 NIMR Scientific Conference in November, 2021



Send-forth of Mr. D. Achanya in June, 2021.



Participants at training on AMR in November, 2021.



World Hepatitis Day in July, 2021.



Team Building activity in CTBR in July, 2021 .



Team Building activities in CIDR in April, 2021.

MOLECULAR BIOLOGY & BIOTECHNOLOGY DEPARTMENT

INTRODUCTION

Molecular Biology and Biotechnology (MBBT) is one of the research Departments in NIMR.

Mission: To conduct research, strengthen research capacity and support career development for national health, wealth and development.

Vision: To be a hub for excellence in Molecular Biology & Biotechnology Research, Workforce Development and Wealth Creation in Nigeria.

Core Values: Excellence, Integrity and Innovation.

Component Units/Lead:

- (i) Molecular epidemiology and Food safety – Prof. S. I. Smith
- (ii) Microbial genetics and nanotechnology – Dr. B. A. Iwalokun
- (iii) Probiotics science and gut microbiome – Dr. T. A. Bamidele
- (iv) Molecular diagnostics – Dr. M. A. Fowora
- (v) Respiratory Diseases Research Laboratory – Dr. T. Y. Raheem

RESEARCH ACTIVITIES/PROGRAMMES (ONGOING AND COMPLETED)

1. Convention of the first ever NIMR– Institute Merieux Young Investigator Award (YIA) in West Africa and the awardees were issued certificates on the 19th October 2020, November 2021– Ongoing
2. Comparative molecular analysis of an outer membrane protein (ompC) of non-typhoidal Salmonella serovars isolated from different sources in Lagos– Ongoing
3. Molecular Characterisation of Metallo–Beta Lactamase and other Resistance Genes in *Pseudomonas aeruginosa* and *E. coli* from two Tertiary Hospitals in South Western Nigeria– Completed
4. Plasmid replicon typing and integrons classes of *Pseudomonas aeruginosa* strains isolated from clinical samples of patients – Ongoing
5. Review of international peer reviewed journals – Ongoing
6. Exploration of biogenic nanoparticles on Proof-of-concept for the treatment of Cancer and multi-drug resistant infections in Nigeria– Ongoing
7. Training on Bioinformatics analysis of big data from Communicable and non-communicable diseases– Ongoing
8. Molecular exploration of alternate RAS pathway for CVD prognostic prediction– Ongoing
9. Sexually transmitted diseases (*Chlamydia trachomatis*, *Neisseria gonorrhoeae*, HIV) and vaginal disorders due to bacterial vaginosis in internet commercial sex workers in Lagos, Nigeria– Ongoing

10. Assessment of Human host-SARS-CoV-2 interactions for improved control and case management of COVID-19 in Lagos, Nigeria- Ongoing
11. Formulation and assessment of the effect of Maraviroc and Tenofovir microspheres on the vaginal lactic acid bacteria microflora- Completed
12. Microbial profile of rinsates and bowl water from selected hand washing stations during COVID-19 pandemic in Lagos, Nigeria- Ongoing
13. Biotechnological potentials of lactic acid bacteria isolated from various sources in Nigeria - Ongoing
14. Nasal carriage of virulent *Staphylococcus aureus*: A possible co-morbidity of COVID-19- Ongoing
15. Nasal bacterial carriage among COVID-19 patients in Lagos, Nigeria: a comparative study among COVID-19 positive and negative patients- Ongoing
16. Development and validation of a locally made RNA extraction kit for diagnosis of COVID-19- Completed
17. Commercial production of NIMR-BIOTECH DNA Extraction and purification kits- Ongoing
18. Commercial production of NIMR-BIOTECH RNA extraction kits- Ongoing
19. Investigation of M. Tb strain diversity in relapsed and recurrent TB cases in Lagos, Nigeria- Ongoing
20. Occurrence and possible association of *Streptococcus*

pneumoniae antibodies to vulnerability and severity of COVID-19 among participants in Lagos, Nigeria- Ongoing

21. Bacterial pathogens in COVID-19 positive individuals – Ongoing
22. Supervision of project students, BSc, MSc, Ph.D.
23. Training of IT students and interns (75)
24. *Klebsiella pneumoniae* co-infection in covid-19 cases: implications for diagnosis and treatment

ACHIEVEMENTS

1. Publication 'An Assessment of the role of healthcare workers, food handlers and the Environment as reservoirs of *Vibrio cholerae* in Abia and Kano States, Nigeria' a NIMR sponsored project.
2. Convener of the second NIMR-Institute Merieux Young Investigator Award (YIA) and the awardee, Dr. Chika Ejikeugwu was issued award on the 9th November, 2021.
3. The only African Consultant, *H. pylori* Maastricht project, Florence, Italy, is a member of MBBT
4. Founding President, African *Helicobacter* and Microbiota Study Initiative with members from 8 African countries.
5. Attendance of Advanced Vaccinology Course in Africa (Afro-ADVAC), sponsored by University of Witwatersrand,

- Johannesburg, South Africa, 13–22 September, 2021
6. External reviewer to YIA proposals for LUTH.
 7. Patenting of NIMR-BIOTECH RNA extraction kits
 8. Alexander von Humboldt equipment grant for upgrading of qPCR and purchase of -80°C ultra low freezer.
 9. Equipment grant of Minlon sequencer in collaboration with Herriot Watt University, UK.
 10. Guest Editor, on special issue for the journal 'Antibiotics' with theme 'Antibiotics Resistance and Therapy for *Helicobacter pylori* infection.'
 11. Established NIMR-AMR Committee following the gap noted by the DG during the last retreat and we already have NIMR grant to conduct some aspect of our proposal.
 12. Career talk, with Early Career Researcher on 'Meet the Expert Session' NIMR, 2021
 13. Mentor in the Humboldt Alumni Innovative Networking Initiatives, 2021
 14. An MBBT member was a Guest Speaker at the 33rd Annual International Conference of Biotechnology Society of Nigeria, March 30, 2021. (Virtual)
 15. An MBBT member was a Guest Speaker at the 5th Annual Conference of Al-Azhar Hepatogastroenterology Club, Cairo, Egypt, 27th August, 2021 (Virtual).
 16. Also, Guest Speaker at the training workshop on Material Development from African Plants Using Biotechnological Approaches, 7th to 9th July, 2021. Venue: UI Centre for Sustainable Development.
 17. Submission of four (4) international grants
 18. Sub-recipient of two (2) projects
 19. Refurbishment of three (3) laboratories, two (2) projects funded

COLLABORATIONS, CAPACITY DEVELOPMENTS (CONFERENCES AND TRAININGS) AND OTHER ACTIVITIES

| S/NO | Activities | Name of Researchers/ Institutions | Staff involved |
|------|---------------|---|----------------|
| 1. | Collaborators | <ol style="list-style-type: none"> 1. Prof. Roland Ndip 2. Prof. Aderemi Adeleye 3. Dr. A. Zautner 4. Prof. Olusoji Ilori (Unilag) 5. Prof. Oduyebo (College of Medicine, Unilag) 6. Prof. Iruka Okeke (Unibadan) 7. Dr. Adedeji 8. Prof. YKE Ibrahim 9. Prof. M. Mamman 10. Dr. Corinne Ngnamoko | Prof. SI Smith |

| | | | |
|---|---|---|---|
| | | <p>11. African Centre for Excellence on Neglected Tropical Diseases (NTDs) and Forensic Biotechnology (Ahmadu Bello University, Zaria, Kaduna State)</p> <p>12. African Centre for Excellence on Mycotoxins and Food Pathogens (Fed. University of Technology, Minna, Niger State)</p> <p>Collaborative activities</p> <p>13. Molecular Biology hands-on training workshop in NTDs MSc, PhD adjunct lectureship and theses supervision on Mycotocins and Food pathogens.</p> <p>Bioinformatics training</p> | Dr. BA Iwalokun |
| | | <p>14. Prof. O. Teniola (OSUSATECH)</p> <p>15. Dr. B. T. Odumosu (Unilag)</p> <p>16. Dr. Bamkefa (Lead City University, Ibadan)</p> <p>17. Dr. O. Alabi (Unibadan)</p> <p>18. Dr. O. Anyakora (Bells University of Tech)</p> <p>19. Dr. O. Lionell (OOU, Sagamu)</p> | Dr. TA Bamidele |
| | | 20. Lead City University, Eko Unimed | Drs MA Fowora, TY Raheem |
| 2 | Research Publications | 36 publications from the staff of the Department | Smith et al Iwalokun et al Bamidele et al Raheem et al Fowora et al |
| 3 | No of Conferences & Workshops Attended | 12 | Prof. SI Smith Dr. BA Iwalokun Dr. M Fowora Dr. TA Bamidele Dr. TY Raheem |
| 4 | Grants / Fellowship Awards | 7 | Prof. SI Smith Dr. BA Iwalokun Dr. M Fowora Dr. TA Bamidele Dr. TY Raheem |
| 5 | Students' Supervision NYSC SIWES / Internship | BSc - 10, MSc - 20, Ph.D.- 3 2 75 | Prof. SI Smith Dr. BA Iwalokun Dr. TA Bamidele Dr. M Fowora Dr. TY Raheem |

CHALLENGES

- Dilapidated laboratory work benches
- Inadequate office spaces/lack of HOD office and seminar room
- Lack of secretarial assistance, COVID-19 restriction, lower cadres work from home
- Self-funding of reagents needed for research
- Lack of adequate staff to help conduct the molecular biology techniques required for the various projects.

WAY FORWARD

1. Provision of marble work benches, offices for HOD/staff, seminar room
2. Employment of new staff (Research Fellows, Scientists, Technologists) to work in the Department
3. Improved funding of the Laboratory.
4. Research Fellows to write more proposals/grants to increase funding for research.

YEAR 2022 WORK PLAN

1. Full commencement of all departmental project works
2. Commencement of at least one international grant obtained from those applied for.
3. Conduct of three trainings/ workshops
4. Completion of staff Ph.D. programmes (2) and at least two PhD students work
5. Commencement of work on the established Food Safety Lab for detection of food pathogens.
6. At least five (5) proposals written
7. Employment of more staff
8. Conduct of the third YIA for IM -NIMR
9. Commencement of the second YIA for NIMR-IM by the Awardee
10. Attendance of at least four (4) international conferences.
11. Supervision of new PhD, MSc and BSc students (5 at least)
12. Publication of at least thirty-five (35) scientific papers.



Advanced Vaccinology Course in Africa (Afro-ADVAC), University of the Witwatersrand, Glenburn lodge, Muldersdrift, Gauteng, South Africa, 13-22 September, 2021.

PUBLIC HEALTH AND EPIDEMIOLOGY DEPARTMENT

INTRODUCTION

The Public Health and Epidemiology Department approaches its primary assignment to conduct research and strengthen public health and national development through the research Units in the Department namely:

- Molecular Parasitology Research Laboratory
- Molecular Entomology and Vector Research Laboratory
- Onchocerciasis and Soil Transmitted Helminths Research Laboratory
- Epidemiology/Health Policy and Systems Research

RESEARCH ACTIVITIES

(ONGOING AND RECENTLY COMPLETED)

- Female genital schistosomiasis: Association with cervical cancer in Nigeria.
- Epidemiology of schistosomiasis and soil-transmitted helminths in Ogun State and the implication of co- infection for disease control.
- Epidemiology of *Schistosomamansoni* in Iwelepe and Ogbere communities in Ogun State and evaluation of sensitivity and specificity of a point of care circulating cathodic antigen (POC- (CCA)) rapid test kit in urine.
- Exploration of the Diversity of Multi-drug Resistant *Mycobacterium tuberculosis* Complex in Nigeria using WGS: Distribution of Lineages, Drug Resistance Patterns and Genetic Mutations.
- Enhancing the fundamentals for effective control of Buruli ulcer through sequencing and mutation analyses of drug resistance in the era of global spread of antimicrobial resistance.
- Molecular epidemiology of urinary schistosomiasis and characterization of human and animal infective schistosome species in three endemic areas of Ogun State Southwestern Nigeria.
- Epidemiological study and molecular characterization of cryptosporidium infections in cattle and nomadic pastoralists in Abeokuta North and Odeda LGAs, Ogun State, Nigeria.
- Contextualized strategies to optimize coverage of school-based mass drug administration for soil transmitted helminthes and schistosomiasis control programs in Nigeria.
- Survey on acceptability and willingness to take COVID-19 vaccine in Nigeria (Completed).
- Nigeria Country Case Study (CD 2030 and Stunting Exemplars) Project. Analysis of Reproductive, Maternal, Neonatal, Child and Adolescent Health and Nutrition: Nigeria Countdown to 2030 and Childhood Stunting Reduction Country Collaboration Research. University of Ibadan in Collaboration with SickKids Centre for Global Child Health, Canada.
- Individual and community factors in the utilization of health insurance scheme in Lagos State, Nigeria.

- Effect of climate change on home management of malaria in Lagos State, Nigeria.

ACHIEVEMENTS

- Development of a novel molecular assay for differentiating *Schistosoma haematobium* from its closely related schistosomes species.
- Building laboratory diagnostic capacity to support the national control program for Buruli ulcer control and research in Nigeria.
- A member, Mrs. V.N.V. Enya, became a Fellow of West Africa Post Graduate College of Laboratory Science

CAPACITY DEVELOPMENT

- Training workshop on use of Computer Assisted Qualitative Data Analysis Software (CAQDAS) – Nvivo. University of Ibadan and the University of Warwick under the Data and Displacement Project (Virtual), September 28–30, 2021.
- Training workshop on Quality Requirement for Clinical Trials/Research. Nigerian Institute of Medical Research in collaboration with European Union Developing Countries Clinical Trial Partnership (EDCTP) and Novartis. Lagos, Nigeria, June 7–9, 2021.

Adjunct Researchers in the Department

1. Dr. Tomiwa Folahanmi Akinsolu
Adjunct Researcher
2. Prof. Yomi Showemimo
Adjunct Research Professor
3. Prof. Chia-Kwung Fan
Adjunct Research Professor

4. Prof. Tang Thean Hock
Adjunct Research Professor
5. Prof. Richard Wamai
Adjunct Research Professor
6. Prof. Conor Caffrey
Adjunct Research Professor

Conferences/Workshops/Trainings/ Meetings attended

- The Africa Research Excellence Fund (AREF) Essential Grant Writing Skills Workshop (virtual) March 11– April 21, 2021.
- The 96th annual meeting (virtual) of the American Society of Parasitologists. July 26–27, 2021.
- RSTMH Annual Meeting (virtual) on drug resistant infections: causes, consequences and considerations. October 11–12, 2021.
- Tenth EDCTP Forum (virtual): Equity in Research for Health. October 17–21, 2021.
- A two-day Training Workshop on Freedom of Information Act for Senior Management Committee Members and Heads of Unit. NIMR Lagos, Nigeria. November 2, 2021.
- Annual **Pan African Mosquito Control Association (PAMCA) conference** in Ghana (2021)
- Annual conference of the Nigerian Institute of Medical Research (2021)
- Speaker at the just concluded Pan African Mosquito Control Association (PAMCA) conference at the Parallel symposium 2 on **“Vector surveillance during the New Net Project pilot evaluations: Estimating the entomological impact of next-generation insecticide-treated nets in**

high-transmission malaria endemic countries” Sept., 2021.

MSc/PhD/Industrial Training students supervised

- MSc - 5
- PhD - 6
- I.T - 30

RESEARCH COLLABORATIONS (INTERNATIONAL AND NATIONAL)

- Department of Pure and Applied Zoology, Federal University of Agriculture, Abeokuta.
- Biology Department, Faculty of Basic Medical and Applied Sciences, Lead City University, Ibadan, Nigeria.
- Department of Zoology, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria.
- Department of Preventive Medicine, Faculty of Public Health, University of Debrecen, Hungary.
- Advanced Medical and Dental Institute, Universiti Sains Malaysia Penang Malaysia.
- Integrative Pharmacogenomics Institute, Universiti Teknologi Mara Selangor, Malaysia.
- Center for Discovery and Innovation in Parasitic Diseases, Department of Pathology, University of California, San Francisco, California, USA.
- Department of Molecular Parasitology and Tropical Diseases, College of Medicine, Taipei Medical University, Taipei, Taiwan.

- Integrated Initiative for Global Health, Northeastern University, Boston, Massachusetts, USA.
- The National Malaria Elimination Program (NMEP) and VectorLinks On Longitudinal Vector Surveillance in Kano, Niger and Osun States, and Insecticide Resistance tests in Kano, Niger, Osun, Adamawa, Kwara, Katsina, Ogun, Delta, Yobe, Jigawa, Gombe and Taraba States.
- Research collaboration with Tropical Health, LLP on the bio-efficacy of Long Lasting Insecticide Nets against Susceptible and Resistant strains of Anopheles under the New Net Project in Nigeria.
- Research collaboration with US Navy Medical Research Unit no. 3 (NAMRU-3) on the surveillance and insecticide resistance status of Aedes species in Lagos, Nigeria.

GRANTS AND FELLOWSHIP AWARDS

Research Grants (2018-2023)

- Universiti Teknologi Mara (UiTM) Malaysia Long-term Research Grant Scheme 2018-2021 [Grant No. 600-IRMI/LRGS 5/3 (0003/2016)].
- The END Fund Pilot NTD Prevention Project Monitoring and Evaluation Grant, 2019-2021.
- The United Kingdom's Foreign, Commonwealth and Development Office (FCDO) African Researchers' Small Grants Program 2020-2021.
- Nigerian Institute of Medical Research (NIMR) Grant Award 2020-2021 (Grant No. 3NM-JRGT-20-0051).

- Nigerian Institute of Medical Research (NIMR) Grant Award 2021-2023 (Grant No. 3NMG-SRGT-20-0055).
- The Royal Society of Tropical Medicine and Hygiene and National Institute for Health Research (NIHR) Small Grants Programme 2021-2022.

CHALLENGES

- Inadequate office and laboratory spaces
- Inadequate funding

WAY FORWARD

- Focused attention in securing fund for research
- Increased training opportunities and sponsorships for staff

2022 WORK PLAN:

- Co-morbidity of SARS-Cov-2 infection with intestinal parasites among individuals in selected markets in Lagos State.
- Conduct research into profiling of malaria vectors for insecticide resistance in Nigeria.
- Conduct research into characterization of Aedes mosquitoes and insecticide resistance of these species in Nigeria
- Investigate the bioefficacy of new and improved innovative dual active Long Lasting Insecticide Nets (LLINs) currently introduced for the control of insecticide

resistant species of mosquitoes in Nigeria.

- Conduct research into the perception of individuals towards the potential release of Genetically Modified Mosquitoes in Nigeria.
- Effect of climate change on home management of malaria in Lagos State, Nigeria.
- Epidemiology of schistosomiasis and soil-transmitted helminths in Ogun State and the implication of co-infection for disease control.
- Epidemiology of *Schistosoma mansoni* in Iwelepe and Ogbere communities in Ogun State and evaluation of sensitivity and specificity of a point of care circulating cathodic antigen (POC-(CCA)) rapid test kit in urine.
- Mycobacterium tuberculosis: Whole genome sequence library, the virulence and drug resistance patterns.
- Enhancing the fundamentals for effective control of Buruli ulcer through sequencing and mutation analyses of drug resistance in the era of global spread of antimicrobial resistance.
- Molecular epidemiology of urinary schistosomiasis and characterization of human and animal infective schistosome species in three endemic areas of Ogun State, South Western Nigeria.

ADMINISTRATION DEPARTMENT

INTRODUCTION

The Administration Department ensures the efficient performance of all Departments/Units in the Institute. It is charged with the responsibility of providing administrative and support services to the Institute. The Department is required to create an enabling environment for the conduct of research through the discharge of its Personnel Management and Administrative functions.

The Department has a total number of 36 staff,

Division and Units in the Department include:

- Registry
- Appointment, Promotion and Discipline
- Pension & Welfare
- General Duties, Training and Development
- Legal Matters
- NIMR Kitchen

ACTIVITIES OF THE DEPARTMENT IN 2021

The activities of the Administration Department in 2021 include:

- i. Provision of Secretarial Services to the Standing Committees of the Institute and in that capacity prepared agenda and the necessary working documents for Standing Committee meetings as directed by the Director-General/CEO.
- ii. Advised Management on administrative and personnel issues.
- iii. Responsible for effective understanding of the Institute's personnel management functions such as recruitment of staff,

training & development, salary administration including allowances, leave matters, staff posting, discipline and withdrawal of service in the form of retirement, resignation of appointment, termination, dismissal from service as the case may be as well as processing of staff Annual Performance Evaluation Reports.

- iv. Responsible for staff welfare matters, implementation of approved policy on Medicare, Pension, Housing etc.
- v. Handling of the Institute's legal and insurance matters.
- vi. Keeping and updating of staff records. Liaising with the Finance & Accounts Department and various Research Departments in the preparation of the Institute's Development Rolling Plans & Annual Budgets.
- vii. Supervision of the Security Unit.
- viii. Handling of official Administrative Correspondence of the Institute with its public.
- ix. Undertook any other duties as may be assigned.

ACHIEVEMENTS OF THE ADMINISTRATION DEPARTMENT IN 2021

1. 2021 PROMOTION

The Department obtained approval for establishment positions from the Office of Head of Service of the Federation (OHCSF) for the conduct of 2021 promotion exercise for qualified staff.

Letters were issued to successful candidates.

The numbers of staff promoted in 2021 and converted are indicated below:

| | |
|--------------|------|
| Senior Staff | - 54 |
| Junior Staff | - 7 |
| Conversion | - 11 |

2. **Project Staff/ Adjunct Researchers:**

a. The Department also facilitated the appointment of Fifty-four (54) project staff in the Institute.

3. **Adjunct Researchers:**

b. 14 Adjunct Researchers were appointed in 2021.

4. **External Relation**

c. Administration Department has ensured that the MoU between the Institute and other organizations has continued to remain cordial, as a result, the Lead City University and Eko University of Medicine are still considering the applications of some of the Institute's Research Staff with the bid to appointing them as Adjunct Lecturers in their organizations.

CONFERENCE/WORKSHOP/TRAINING

The Covid-19 pandemic crippled the activities globally, but **twenty (20)** staff of the Department attended Training /Workshop organized by the Centre for Management Development (CMD) in Lagos and Administrative Staff College of Nigeria (ASCON), Badagry respectively.

NYSC/INDUSTRIAL TRAINING PROGRAMS

The Department had absorbed some National Youth Service Corps (NYSC) members, enrolled students for the Industrial Work Experience Scheme (SIWES), Bench Space and Internship as follows:

| | | |
|-------------|---|-----|
| Bench Space | - | 15 |
| Internship | - | 60 |
| NYSC | - | 57 |
| SIWES | - | 299 |

CHALLENGES

The Department encountered some challenges in the course of discharge of its duties in 2021. They include:

- Shortage of Secretaries and Clerical Officers
- Lack of office equipment e.g. computer systems, etc.

WAY FORWARD

The Administration Department would continually plead with the Management to create enabling environment for it to carry on its works efficiently, by providing working tools such as computer systems, etc. The Administration Department will continue to perform its functions as enumerated above and will ensure that the Institute operates within the ambit of the extant rules and regulations guiding the Public Service.

2022 WORK PLAN

The Department will continue to handle all the Institute's programmes on administrative matters and any other duties that may be assigned to it during the year 2022.

INTRODUCTION

The Central Research Laboratory (CRL) has been the nexus of research and service support for NIMR staff and other researchers in the country. CRL was reactivated by the present NIMR Management under the headship of Prof. Babatunde Lawal Salako in May, 2019.

Vision: To be the laboratory of excellence in state-of-the-art equipment availability, research support and human capacity building in Nigeria.

Mission: To provide access to the state-of-the-art-equipment and enabling environment for researchers within and outside Nigeria to build their research skill sets, conduct high throughput research and compete for grants effectively with researchers from other parts of the world.

Core Values: Excellence, Commitment & Innovation

The CRL is equipped with modern equipment to service the research needs of the relevant research departments of the Institute and the public.

It intends to advance research in most health research disciplines including

Biological and Clinical Sciences and compliment other specialized departments of the Institute.

CRL Team composition

1. Dr. Iwalokun Bamidele (Director)
2. Dr. Onwuamah Chika (Deputy Director)
3. Dr. Otuonye, Ngozi (Lab Manager)
4. Mrs. Ayobami Joy (Scientific Officer)
5. Mr. Itseyam Yussuf (Lab Technologist)

Expert Committee Members

6. Dr. James, Ayorinde
7. Dr. Fowora, Muinah
8. Dr. Ajibaye Olusola
9. Dr. Okwuraiwe Azuka

Project staff

10. Oni Grace
11. Isong Josiah
12. Jimoh Rukayat
13. Bello Ridwan
14. Adeeko Seunfunmi
15. Azeez Blessing
16. Ochuko Christopher
17. Olunaike Solomon
18. Eket Essiet

RESEARCH ACTIVITIES

CRL, in its strategic plan for 2021, focused and achieved based on the following three (3) Strategic Thematic Areas:

| S/N | Strategic thematic Area | Activity | Status |
|-----|---------------------------|--|---------|
| 1 | Strategic thematic Area 1 | To improve funding available to the Institute. | Ongoing |
| 2 | Strategic thematic Area 2 | To upgrade and maintain existing laboratory for the Institute's strategic needs. | Ongoing |
| 3 | Strategic thematic Area 3 | To establish new networks, collaborations at all levels and make NIMR nationally and globally relevant for research. | Ongoing |

ACHIEVEMENTS

i. **Expansion of the workforce at CRL**

In 2021, the workforce of CRL was expanded by the NIMR Management with the employment of 9 project staff deployed into the various Laboratory Units under CRL. They are: Drug Discovery & Toxicology Laboratory, Central Sequencing Laboratory, Tissue Culture and Immunoassay Laboratory and Food Safety Laboratory.

ii. **Establishment of Capital Research Equipment Database (CRED)**

Achievement based on 2019-2022. In an effort for NIMR CRL to streamline and harmonize operations and access to all capital equipment procured by the Institute under the

- iii. Management of CRL, CRED was established. The goal is to optimize the use and productivity of the capital equipment in the Institute for research services, innovation and total quality. These include:
- Procurement related information.
 - Equipment location
 - Usage
 - Calibration need
 - Maintenance
 - User Manuals availability to Client/ Research Collaborators
 - SOPS
 - Safety regulations
 - Biorisk Assessment
 - Training & Decommissioning

The above elements are for the purpose of streamlining the access, accountability & monitoring of all the equipment in CRL.

iii. **Achievements based on Newly Acquired Machines, Purposes, Installation, Other Infrastructure and Training Status (Capacity Development)**

| S/N | Name of Equipment | Purposes | Training Status |
|-----|--|--|---|
| 1 | DNA Sequencing Library Preparation System | Automated is a workstation specialized for high-throughput sequencing library preparation | 6 participants completed training |
| 2 | Agilent 2100 Bioanalyzer | Invitrogen Qubit Fluorometers Quickly & Accurately Quantifies DNA, RNA and Protein concentrations | 6 participants completed training |
| 3 | Agilent 5800 ICP SPS 4 Autosampler | It provides qualitative and quantitative information of elements present in a sample | 6 participants completed training |
| 4 | Agilent 5977B GC/MSD SYSTEM | For applications on environmental, chemical, petrochemical, food, forensic, pharmaceutical, and material testing | 8 participants completed training |
| 5 | Genetic Sequencer DNBSEQ G-50 | With a design of two different Flow Cells, it empowers flexibility and creates an ideal balance between speed and affordability | 8 participants completed training |
| 6 | VIDAS High Performance Food Automated Pathogen Detection | For advanced testing of pathogen detection: is a fast, automated, robust, reliable, and efficient multi-parametric immunoassay system designed to provide the most accurate laboratory results | Training at a planning stage |
| 7 | Bio rad thermocycler PCR Machine | It offers high-performance standard and gradient thermal cyclers for routine PCR | 10 participants completed training |
| 8 | minION | For a paradigm shifting device allowing rapid, real time long read sequencing of nucleic acids | 6 participants completed training |
| 9. | NIMR CRL sequencing Laboratory | Research Services and an insight into the SARS -CoV2 Genome sequencing efforts at the CRL, NIMR, Yaba | Completed and Commissioned by the Honorable Minister of State for Health. |

The descriptions of the above equipment are currently on the CRL portal, NIMR website (<https://nimr.gov.ng/laboratory-services/central-laboratory/>)

iv. **Research Services, SARS-CoV-2 Genome Sequencing & Research Collaboration implemented at CRL for 2021**

| S/N | Samples Sequenced | Number of Samples | Collaborating Clients Institution | Success Rate (%) |
|-----|--|-------------------|---|------------------|
| 1 | SARS CoV2 Sequencing | 250 | LUTH, CHVG, IDH, Lagos Biobank, MRL, Osun State University, CHAZV | 67% |
| 2 | Methylation Analysis some selected cancer genes | 25 | NIMR | Completed |
| 3 | Minisatellite DNA analysis from <i>P. falciparum</i> | 52 | NIMR | Completed |
| 4 | Sanger Sequencing | 27 | NIMR | Completed |
| 5 | Selected <i>P. aeruginosa</i> virulence gene sequencing | 10 | NIMR | Completed |
| 6 | GC/MS analysis of food and environmental samples | 50 | | Completed |
| 7 | ITS gene sequencing of <i>Aspergillus flavus</i> | 15 | LABNOX, NIMR, & UNILAG | Completed |
| 8 | Whole genome sequencing of <i>Candida auris</i> strains | 3 | UNILAG | Ongoing |
| 9 | Whole genome sequencing of <i>M. tuberculosis</i> isolates | 10 | Centre for TB Research, NIMR | Ongoing |

v. **Internship Placement at CRL for 2021**

Undergraduate IT (15 students)

Graduate & Postgraduate Internship (10)

vi. **Number of BSc, MSc and PhD Students Co-Supervised at CRL for 2021**

- BSc. 6 Students, Caleb University
- MSc. 6 Students, University of Lagos
- PhD. 5 students (Olabisi Onabanjo University (3), University of Benin (1), University of Lagos (1))

CAPACITY DEVELOPMENT (CONFERENCES /WORKSHOPS/TRAINING ATTENDED)

- Emory –Nigeria HIV Research Training Programme Completion of Short-Term Training. Southern Sun Hotel, Ikoyi, Lagos, Nigeria 8th -10th/12/ 2021.
- 2-Day Hands on Forensic Workshop on Crime Scene Simulation Dr. DK Olukoya CRL Molecular Biology Unit, University of Lagos 8-9/11/2021.
- NIMR Conference on Health Advances Innovation and Research, NIMR, Yaba, Lagos, Nigeria 8/11/2021

- Nigeria Biological Safety Association Conference. The Imperatives of Biosafety & Biosecurity in a Developing Economy. 23 –26 Nov, 2021, Ikeja, Lagos, Nigeria
- Keystone Symposia Conference: Global Priorities in Vaginal Health 10–12th Nov, 2021
- African–Indian Mobility Training award: This award provided HLA Typing training, at Ruby Hospital Grand Medical Hospital, Pune, India. Grant amount March–May, 2021.

COLLABORATIONS

New Collaborations with other

Institutions/Research Programmes for 2021

- Emory– Nigeria HIV Research Training Program
- African Academy of Science (AAS)
- Nigerian Center for Disease Control (NCDC)
- MRC, the Gambia
- Lagos Bio bank
- Lagos State Infectious Diseases Hospital
- Osun State University
- Bayero University, Kano
- Lagos State University
- Central Research Laboratory, LUTH

GRANTS / FELLOWSHIP AWARDS

1. 2021 NIMR– Post-Doctoral Research Training /Travel Grant (PRTG Training on Genomic Paternity Dispute with (Code 4NIMR PRTG-21-0005).

2. Two 2021 NIMR–Federal Government of Nigeria COVID–19 Research Support Grant (Grant No. NMG–CIF–21–0072).
3. World Bank Grant in Collaboration with African Centre of Excellence in Mycotoxins and Food Safety (ACEMFS)
4. 2020–2021 Africa–India Mobility Three Months Travel Award (AIMF)

CHALLENGES

- Lack of sequencing reagents for non-SARS–CoV–2 pathogens
- Limited funding for sequencing bacterial pathogens (E.g. *Mycobacterium tuberculosis*), fungi (E.g. *Candida auris*), parasites (E.g. *P. falciparum*) and vectors (E.g. *Anopheles gambiae* & *Aedes aegypti*).
- Need for Sanger sequencing reagents for clientele training and research service implementation.

WAY FORWARD

1. Deployment of Public Private Partnership to drive sequence of pathogens for clients patronizing CRL, NIMR in 2022
2. Establishment of genomic sequencing and surveillance collaboration with other genomic laboratories within and outside Nigeria
3. Strengthening awareness creation strategy of CRL for creating demands for its research services (Genome sequencing, gene sequencing, GC/MC analysis, HPLC analysis, ELISA assays, Gene Expression, RNA sequencing and Oligo synthesis).

CLINICAL DIAGNOSTIC DEPARTMENT

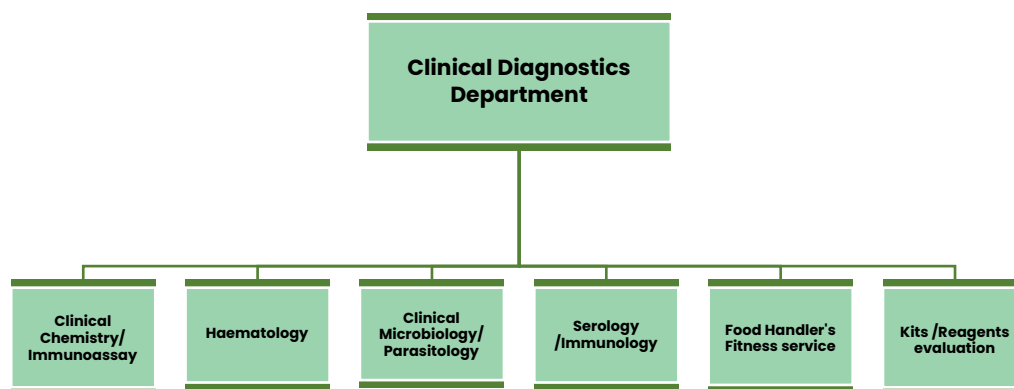
INTRODUCTION

The Clinical Diagnostics Department (CDD) formerly Clinical Diagnostics Laboratory (CDL) was upgraded to a Department on 16th September, 2021 by the management of the Institute.

Clinical Diagnostics Department is saddled with the responsibility of providing laboratory services to the public, training and research activities.

There are six (6) Divisions in CDD namely, Clinical Chemistry/Immunoassay, Haematology, Clinical Microbiology/Parasitology, Serology/Immunology, Food Handlers Fitness Service and Kits/Reagent Evaluation.

CDD also provided and still providing quality internship training for eligible graduates of Medical Laboratory Science and others through collaboration with universities and training institutions



RESEARCH ACTIVITIES

- The following research activities were carried out in the Department. Some are ongoing while some completed:
- COVID-19 Sero-epidemiology Study in Nigeria (using Abott i1000 and some of the staff of CDD; **(PI: Prof. R. Audu *et al*)**).
- APOLI research project of the DG and other Co-researchers (using the TC matrix and some staff of CDD; **(PI- DG)**).
- Sterility Assessment of locally produced face masks by the public in Lagos, Nigeria during COVID-19 Pandemic

(A collaborative research among staff of CDD and MB&BT Department, NIMR; **(PI: Dr. TY Raheem)**)

- Vit D, Liver enzymes and Kidney function Assessment in SARS COV-2 infected and uninfected individuals in Lagos, Nigeria. **(PI: Dr. TY Raheem)- ongoing**
- Utility of temperature measurement using non-contact infrared thermometer in detecting abnormal temperature as an infection control measure in the era of COVID-19(A collaborative research among staff of CDD and Public Health

International, Walter Reed Program Nigeria and Nigerian Ministry of Defense in the training of Medical Laboratory Scientists and other health workers in malaria diagnosis in the country.

- Support to Polio containment programme of FMOH: CDD was one of the sites selected for handling/treatment of faecal samples as potential polio virus containing samples.
- Lead City University, Ibadan.
- Ahmadu Bello University, Zaria.

NIMR GRANTS AWARDS

- Innovative Grant for Development of Communication Strategy for the Management and Dissemination of Research Innovation and Findings for COVID – 19 Pandemic. (3NIMRGA0033-20-01 Dr. T.Y. Raheem).
- Vitamin D levels, Liver Enzymes and Markers of Kidney Function in SARCoV-2 infected and non-infected individuals in Lagos, Nigeria. (PI Dr. TY Raheem)

CHALLENGES

- Inadequate personnel.
- Lack of backup for some key equipment e.g., ELISA Machine, Chemistry analyzer, etc

- Inadequate Medical Laboratory Scientists to handle the increasing workload.
- Inadequate work/office space.
- Lack of service contracts for specialized equipment in the Department.

WAY FORWARD

- Service maintenance agreement for specialized equipment is needed.
- New ELISA Machine is needed to replace the old one.
- Purchase of additional fridges, freezers, desktop computers, and printers.
- Replacement of old air-conditioning units.
- Conducive work /office space is needed.

2022 WORK PLAN

- To continue implementation of the quality management system and specialized laboratory services.
- To increase research collaborations with NIMR Research Departments and other tertiary institutions.
- Advocacy and wellness programme / training of food handlers/vendors/consumers.
- To increase internally generated revenue in the Department



UPGRADING OF CDL TO A DEPARTMENT:

Department, NIMR; (**PI: Dr. B. Adewale/ Dr. TY Raheem**).

- Emergency preparedness and response cholera research team (**PI-Prof. SI Smith**)
- Health and wellness project for Food handlers and Consumers in Lagos State, Nigeria (**'Gbaja' Project; PI- Dr. TY Raheem**)
- Molecular Epidemiology of Carbapenem-Resistant Enterobacteriaceae (CRE) infections (**PI-Mrs. M. Aniedobe**).

ACHIEVEMENTS

- Upgrading of Clinical Diagnostics Laboratory to Clinical Diagnostics Department.
- Provision of Laboratory services to more clients from 8:00am to 8.00pm, Monday to Friday. Call duty services also available on weekends.
- Sustained implementation of Quality Management System (QMS) and internal laboratory audit.
- Improving the turn-around time and quality of laboratory services and prompt dispatch of results through e-mails to clients.
- Provided uninterrupted essential routine laboratory/research services during the COVID – 19 lock-down period. Undertook a total number of 5,422 laboratory diagnostic assays from January-December, 2021. Hematology 1,327, Serology-1,601, Microbiology-269,

Chemistry-1,725, Immunoassay-456, and Fungal studies-44.

- Improvement on inter-unit and inter-departmental relationships and research collaborations.
- Infrastructural upgrading of CDD: new Air-conditioners in the laboratory, refurbishment of departmental Common Room with Conference table, chairs, Air Conditioners.

CAPACITY DEVELOPMENT

- No of conferences, trainings & workshops Attended: (10)
- No of Students on internship: (6)
- No of M.Sc. students (2)
- No of Ph.D. students supervised: (2)
- No of NYSC trained (1)
- No of IT students trained (7)

COLLABORATIONS (NATIONAL)

- Involvement of CDD staff in National Programmes of FMOH/other agencies: malaria elimination programmes of FMOH and the Kit validation by MLSCN: (Focal persons: Mr. S.K Akindele and Mrs. M. Aniedobe).
- Involvement in National Therapeutic Efficacy Studies (TES) through our **LEVEL 1 WHO** malaria microscopist. Mr. Akindele S.K is a Quality Assurance Officer for the year 2021 TES in Kaduna State.
- CDD was also involved with the collaboration of FMOH and Henry Jackson Foundation for Medical Research

CORPORATE MARKETING & COMMUNICATION UNIT

CMCU is responsible for marketing and management of the Institute's business facilities such as the Auditorium, Conference Rooms and the Researchers' Suites. The year 2021 saw a gradual pick-up of activities within the Unit after the devastating effect of covid-19 pandemic of the previous year. There had been a gradual increase in activities in the use of the facilities in the Institute.

ACTIVITIES

Rental of Institute's facilities

- 300 capacity Auditorium
- 100 capacity Conference Room
- 40 capacity Conference Room
- 10 capacity Syndicate Room

Researchers' Suites

These facilities get a steady increase in sales at the second quarter of the year with the gradual opening of the economy. There was increase in patronage in the use of the Conference Rooms, Auditorium and also the Researchers' Suites.

Laboratory Services

The year started with the signing of MoU with the IHMS (International Health Management Services). Our clients from the Glorious Health Services were unable to access the laboratory services during the pandemic thereby leading to the discontinuity in our relationship.

Parking Lot

The parking space had not been operating on a daily basis as it used to due to the Covid-19 testing that was ongoing at the place.

RIND – Research Innovation and Product Developments

The CMCU worked closely with RIND in the patent and marketing of the products developed by the Institute.

Researchers' Suites

The 22-room well furnished apartment had attracted and served researchers in NIMR, research partners and collaborators, NIMR Guests, Conferences and workshop participants. Like other facilities, it functioned maximally in the year 2021.

Challenges

- Shortage of Staff
- Lack of modern ICT facilities
- Outstanding bills with HMOs

Way Forward

- Introduction of modern ICT facilities, in addition to the existing conference facilities, that will enhance virtual meetings, conferences and workshops.
- Develop and maintain a partnership with relevant external training outfits
- Improvement on the staffing and maintenance of the Researchers' Suites to maintain the standard.
- Reaching out to both old and new HMOs to patronize the Institute's laboratories.
- Maintain a productive working relationship with RIND.

FINANCE AND ACCOUNTS DEPARTMENT

INTRODUCTION

The Finance and Accounts Department handles all financial transactions of the Institute, as well as management of its financial resources. It has four main units and three sub-units which include – Other Charges, Treasury, Budget & Salaries, Stores, Centre for Human Virology & Genomics (CHVG), Clinical Sciences Department (CSD), and Clinical Diagnostic Department (CDD).

The administration of the Units and Sub-Units are vested in the hands of Unit Heads who report directly to Head of Finance and Accounts. The Department performs a wide range of accounting functions though these had suffered serious setbacks in the year 2021 especially in the area of internal revenue generation due to effect of **COVID-19** pandemic with its financial and economic implications.

The Department continued with its normal activities in the year as highlighted below.

ACTIVITIES

The activities carried during the year under review include but not limited to the following:

- Maintenance of relevant books of accounts of the Institute
- Budget compilations for Capital, Overheads and Personnel expenditures
- Management of Internal and External Grants

- Supervision and Control of Stores
- Oversight and monitoring of internal revenue generation
- Performance of banking related functions
- Other functions delegated by Management

ACHIEVEMENTS

The achievements of the Department include the following:

- Completion of audit of 2019 Accounts of the Institute and submission to Office of the Auditor – General for the Federation.
- Successful defence of the 2020 budget at the National Assembly leading to release of funds for operational and capital projects execution in the Institute.
- Acquisition of additional office space for operational effectiveness.
- Improved Capital budgetary allocation to the Institute.

CONFERENCES /WORKSHOPS/ TRAININGS

The Department attaches importance to continuous training of its personnel for sustainable improvement of productivity. A total number of twenty- four (24) trainings/conferences were conducted for staff of the Department. The training was handled by Administrative Staff College of Nigeria (ASCON).

CHALLENGES

- Inability to secure improved **Overheads** from the Federal Government in the annual budgetary allocation to fund operational costs.
- High rate of staff exit from service without replacement affects the Department in the area of manpower required to carry out all its functions.

WAY FORWARD/RECOMMENDATIONS

- Continuous interface with the National Assembly to attract government funds to the Institute should be sustained in the coming years.
- The Management should consider recruitment of experienced accounting staff to address manpower shortage.

2022 WORK PLAN

- Arrangement for continuation of payment of unspent Capital Funds brought forward from previous fiscal year.
- Revenue Collection monitoring in all the four (4) quarters of year 2022
- Preparation for audit of 2020 and 2021 accounts of the Institute
- Defence of Annual Budget at National Assembly
- Sustenance of payment processing throughout the year.

GRANT, MONITORING AND EVALUATION UNIT

Introduction

The Grants, Monitoring and Evaluation Unit is saddled with the responsibility of providing Grants, Statistical support, coordinating and supporting Data management and Monitoring and Evaluating activities of the various Departments and Units in the Institute.

The Unit is divided into 4 Sub-Units which include: Grants, Biostatistics, M&E and Data Management.

Functions of the Unit

- Statistical Issues: Support for Departments, Units and Research Groups in study design, sample size calculation, sampling method and data analysis.

Grants Management Unit has the full responsibility of overall oversight and project funds which includes:

- Ensures strict adherence to all terms and conditions of the Grant
- Disseminates/Notifies staff of upcoming calls
- Collates reviewed NIMR Calls
- Issues Awards
- Meets the needs of the beneficiaries
- Facilitates effective communication among all stakeholders; and
- Documents and maintains the records of NIMR's grants (both internal and external)

Data Management:

Supports studies, Departments and Units in the Institute generating data for data Management. Coordinates reports from data generated, reviews data collection tools, ensures cleaning, validation and backup of databases. Coordinates abstraction of data for research activities.

Ongoing Research Activities

- Database Management for Research studies, Departments and Units that generate large data sets
- Entomology Surveillance
- An Investigation into the epidemic of chronic kidney disease in Hadejia, Jigawa State, Nigeria
- Mass drug administration in the management of trachoma in northern Nigeria: Implications on child survival.
- Circum Vent (Ventilator) Project
- Innovative Tool to Expand HIV Self Testing (ITEST) among Nigerian Youth
- Population-based seroepidemiological and household contact study protocol for COVID-19 virus infection
- Study of APOL-1 Gene Variants and the Risk of Kidney Disease in COVID19 in Nigeria

Ongoing Research Activities

- Social distancing as a public health intervention against Covid-19 pandemic. Effect of social determinant of health prevailing in Nigeria

- Mathematical models of Covid-19 pandemic in Nigeria predictions and impact
- New Nets Project Entomological Surveillance/Insecticides Resistance Monitoring
- Emory-Nigeria HIV Research Training Program (EN-RTP)
- Integration of Hypertension Management into HIV Care in Nigeria. (TASSH)
- Carried Out Targeted Support for Research on Sulphadoxine-Pyrimethamine (Sp) Resistance Studies in Ebonyi and Osun States Under the IPTI Effect Study Project
- The Nigerian Cardio-Metabolic Genomics Study (NicGen)

Extent of Implementation of Strategic Plan...1

| S/N | Activities | Key performance Indicators % | Targets | Achievement |
|-----|--|--|-------------------------------|---|
| | Increase collaborations for research | # of new collaborations | 2 new collaborations per year | 3 Achieved > 100% |
| 2 | Develop and support development of research proposals | # of new proposals developed # of proposals supported | 5 research studies per year | 8 Achieved -100% 2 within the Unit and 6 in collaboration with other Departments |
| 3 | Attract grants | # of grants awarded | 2 per year | 6 Achieved ->100% 2 within and 4 in collaboration with other Departments |
| 4 | Disseminate research findings | # of completed /ongoing studies disseminated | 4 per year | 16 Achieved 2 within the Unit and 14 in collaboration with other Departments |
| 5 | Data Management Support for research (Data cleaning, tool development, data analysis, statistical issues in manuscript etc.) | # of research studies supported | 10 research studies per year | Achieved > 13 support provided > 100% |

Thematic Area 3:

Development of Human Resources required for health research

Strategic Objective 3

Training researchers and other individuals on Data Management/Biostatistics, Monitoring and Evaluation (M&E) of Health programme Courses

| S/N | Activities | Key performance Indicators % | Targets | Outcomes |
|-----|---|--|--|---|
| 1 | Conduct trainings on Biostatistics /Data Management / Monitoring and Evaluation of health programme courses | <ul style="list-style-type: none"> • # of individuals trained on Data Management/Biostatistics course. • # of individuals trained on Monitoring and Evaluation of health programme course. • # of individuals trained on the use of Data Management tool REDCap | <ul style="list-style-type: none"> • 50 individuals trained in Data Management for 2021 • 1 training to be conducted for 2021 • 2 trainings to be conducted | <ul style="list-style-type: none"> • Data Management Achieved – online • Biostatistics training – In house • Not achieved • 1 achieved (100%) |

Extent of Implementation of Strategic Plan...3

Thematic Area 5: Development of Human Resources required for health research
Strategic Objective 1: To maintain existing platforms and increase them by 2 for grant submission and maintenance.

Strategic Objective 2: To advertise NIMR internal calls, follow up and issue letters of award

Strategic Objective 3:

Disseminate calls for proposal
Strategic Objective 4: Maintain and document grants/grants activities in the Institute

| S/N | Activities | Key Performance Indicators % | Targets | Achievement |
|-----|--|--|---|--|
| 1. | Renew all grant access platforms | # of renewals done # of new registrations | Renewal of all existing platforms 1 new registration | Achieved |
| 2 | Support research proposals | # of new proposals developed # of proposals supported | 5 research studies per year | 3 Achieved within 2 In collaboration with other Departments |
| 3. | Advertise NIMR Calls | Advertise 3 Calls | 3 per year | Achieved 6 calls > 100%- established a new call |
| 3. | Follow up with reviewers and finalise reviews | # of grants awarded # of renewals | 15 Awards 8 renewals | 12 awarded Achieved 100% |
| 4. | Issue awards | | | |
| 5. | Renew existing grants | | | |
| 3. | Disseminate calls for proposal | Regular dissemination of calls at least 2 per week | ≥ 8 calls per month | Ongoing |
| 8. | Maintaining ongoing grants (through technical and financial report) | # of ongoing grants that submitted technical reports | Internal - 100% External - 50% | Internal - 100% External - 30% |
| 9. | Documentation of old and new grants (opening of files with necessary documents associated with the grants) | # of new grants that are documented in the Unit | | |

NIMR Grants (External On-going 2020/2021)

| S/N | PRINCIPAL INVESTIGATOR (PI) | GRANTS TITLE | GRANTS PERIOD | AMOUNT | STATUS | DONOR |
|-----|------------------------------|---|---------------|--------------|-----------|----------------------------------|
| 1 | Prof. Babatunde Lawal Salako | Mass drug administration in the management of trachoma in northern Nigeria: Implications on child survival. | 6 months | ₦16,907,280 | Completed | Sightsavers |
| 2 | Prof. Babatunde Lawal Salako | Circum Vent (Ventilator) Project | 1 Year | ₦37,000,000 | Completed | Dangote Foundation |
| 3 | Prof. Babatunde Lawal Salako | Study of APOL-1 Gene Variants and the Risk of Kidney Disease in COVID19 in Nigeria | 1 year | \$17,823 | On-going | Northwestern University |
| 4 | Prof. Babatunde Lawal Salako | Evaluation of CPAP/helmets to support patients with severe COVID-19 illness in Nigeria. | 1 year | \$176,110 | On-going | CDC FOUNDATION |
| 5 | Prof. Babatunde Lawal Salako | REACH Project (Planning Grant) | 24 Months | ₦24,000,000 | 2 months | BMGF |
| 6 | Prof. Oliver Ezechi | Innovative Tools on Expand Youth Friendly HIV Self-Testing I-TEST | 5 Years | \$282,153.00 | On-going | NIH |
| 7 | Prof. Oliver Ezechi | Emory-Nigeria HIV Research Training Program (EN-RTP) | 5 Years | \$50,008.81 | On-going | NIH Fogarty International Center |
| 8 | Prof. Oliver Ezechi | Integration of Hypertension Management into HIV Care in Nigeria. (TASSH) | 2020-2025 | \$182,650.00 | On-going | NIH |
| 9 | Prof. Rosemary Audu | Performance Evaluation Of The Genedrive Hcv Id Kit For Decentralised Diagnosis Of Active Hepatitis C From Human Plasma In Nigeria | 6 months | \$16,470 | On-going | Genedrive |

| | | | | | | |
|----|--|--|-----------|------------------------|-----------|--------------------------------|
| 10 | Prof. Rosemary Audu | Population-based seroepidemiological and household contact study protocol for COVID-19 virus infection (Lagos State) | 6 months | \$34,955 + ₦22,321,000 | Completed | UCL and NCDC |
| 11 | Dr. Nkiru A. David / Institutional | Strengthening Integrated delivery of HIV AIDS services (SIDHAS) | 19 months | ₦11,625,000 | On-going | FHI360 |
| 12 | Dr. Nkiru A. David | Evaluation of the efficacy and safety of selenium supplementation on the management of COVID-19: A randomized controlled clinical trial. | 1 year | \$5,975 | On-going | SERCSA |
| 13 | Dr. N.N Onyejebu | Fellowship | 1 year | €9,972,50 | Completed | EDCTP |
| 14 | Dr. N.N Onyejebu /Institutional | TB Diagnosis | 1 year | €5,520 | On-going | WANATEM |
| 15 | Dr. Chika Onwuamah | Developing the SarsCov-2 Isothermal assay. | 4 months | ₦20,000,000 | On-going | Fate Foundation |
| 16 | Dr. Oladele | DTG Study | 1 year | ₦2,759,000 | On-going | |
| 17 | Prof. S.T. Awolola / Dr. Dapo Adeogun | Bioefficay and IRS residual life of SumiSHield 50WG insecticide against Anopheles species | 1 Year | \$18,191.90 | On-going | Sumitomo |
| 18 | Prof. S.T Awolola/ Dr. Dapo Adeogun | Malaria Vector Surveillance and Insecticide Resistance. | 1 Year | ₦14,149,740 | On-going | ABT-PMI development foundation |
| 19 | Dr. Dapo Adeogun | KISUMU | 1 Year | \$19,148 | On-going | KISUMU |
| 20 | Dr. Adedapo Adeogun | Comparative Bio-efficacy of Three New Aerosols against Mosquitoes and Cockroaches. | 1 year | ₦1,455,400 | Completed | Sarolife |
| 21 | Prof. Awolola / Dr. Dapo/Institutional | Entomological Surveillance Project | 3 Years | ₦109,170,017.00 | On-going | NMEP/GF |

| | | | | | | |
|----|---------------------|---|----------|---------------|----------|---|
| 30 | Dr. Olukosi Adeola | Carry Out Targeted Support for Research on Sulphadoxine-Pyrimethamine (Sp) Resistance Studies in Ebonyi and Osun State Under the IPTI Effect Study Project | 1 Years | ₦9,996,855.00 | On-going | Malaria Consortium |
| 31 | Dr. Olusola Ajibaye | A Novel Non-Kelch-13 Artemisinin resistance: Investigating Association with Artemisinin resistance in comparison with Kelch-13 propeller gene among plasmodium falciparum malaria patients in Lagos, Nigeria. | 1 year | £11,985 | On-going | EDCTP/WANETAM 2 |
| 32 | Dr. Emelda Chukwu | Survey of antimicrobial resistance burden in Lagos State. | 2020 | £10,000 | On-going | Institu-merienx |
| 33 | Dr. Chika Onwuamah | Workshop on HIV drug resistance testing | 2 months | £8096.11 | One-off | WANATEM |
| 34 | COVID 19 Support | COVID 19 Support | | £13, 509.53 | | |
| 35 | Covid 19 Donations | Covid 19 Donations | | ₦51,600,000 | | Union Trust, Raji Fashola, Sandeep |
| 36 | Dr. Agatha David | Intensive combination Approach to rollback the Epidemic (iCARE) in Nigerian Adolescents. | 4 years | \$130,000 | On-going | NIH/North Western University |
| 36 | Dr. B. Adewale | Individual And Community Factor in The Utilization of Health Insurance Scheme in Lagos State, Nigeria. | 1 Year | ₦2,527,800.00 | On-going | African Health Observatory Platform. AHOP National Center |
| 37 | Dr. Kolapo Oyebode | Second European and Developing countries clinical trial partnership programme. | 36months | €112,017 | On-going | EDCTP |

| | | | | | | |
|----|---------------------------------------|---|-----------|----------------|-----------|---|
| 22 | Prof. Awolola/ Dr. Dapo/Institutional | New Net Project Entomological Surveillance/Insecticides Resistance Monitoring (NNP) | 2 Years | ₦18,999,000.00 | On-going | NMEP/GF |
| 23 | Dr. Dapo Adeogun | Bioefficacy and toxicity Effect of Good Knight power shots Multi Insect Killer Spray against Field collected Anopheles Mosquitoes and Laboratory Rats and Mice. | 2020 | ₦1,266,120 | On-going | Good Night Nigeria Limited |
| 24 | Dr. N.N Onyejebu / Institutional | Scaling up services for DR-TB prevention and Control | 2 Years | ₦3,234,000 | On-going | IHVN/GF |
| 25 | Dr. David Oladele | The Nigerian Cardio-Metabolic Genomics Study (NicGen) | 1 year | ₦10,000,000 | On-going | 54GENE |
| 26 | Dr. David Agatha Nkiruka | Management of Malaria in African Countries: A Prospective Non-Interventional Cohort Study. | 2020-2021 | \$29,352.78 | On-going | NOVARTIS/South Africa |
| 27 | Dr. N. Otuonye | Travel grant | One Off | \$1,730 | Completed | |
| 28 | Dr. Greg Ohihion | A Multicentre, Double blind, randomized, parallel group, clinical trial to compare the sexual pleasure, performance, acceptability and safety of Grapheme incorporated natural rubber latex condoms and natural rubber latex. | 2018 | 967,386.25 | On-going | XCene Research Limited, Nigeria/ Ethicare clinical trial service, India |
| 29 | Dr. David Agatha Nkiruka | An assessment of the effectiveness of SMS reminders in improving ART adherence among adolescents living with HIV in Nigeria. | 2019 | ₦575,828 | On-going | BABCOCK University |

| | | | | | | |
|----|-----------------------------------|---|---------|---------------------|-----------|------------------|
| 38 | Dr. Sola Ajibaye | Developing Capacity in Malaria Genomics, Bio-Informatics and In-Vitro Culture to Undertake and Lead Research in Antimalaria Resistance. | | €1195.20 | On-going | AREF PROJECT |
| 39 | Mrs. Kunle-Ope C.N /Institutional | IHVN PROJECT GRANT | 1 Year | ₦2,266,120 | On-going | Global-fund/IHVN |
| 40 | Dr. Odubela | PhD Position | 3 Years | R605,000 (\$37,821) | On-going | EDCTP |
| 41 | Dr. Olukosi | Travel grant | 4 weeks | €4,225 | One off | EDCTP-GSK |
| 42 | Mr. Joseph Shuaib | SCODA | One off | ₦30,000,000 | Completed | Patent |

INTERNAL GRANTS

NIMR Ongoing Grants 2019/2020 (Internal (Predoc))

| S /N | PRINCIPAL INVESTIGATOR (PI) | GRANTS TITLE | GRANTS PERIOD | GRANT NUMBER | AMOUNT (₦) | STATUS | DONOR |
|------|-----------------------------|---|---------------|-----------------------|------------|----------|----------|
| 1 | Mrs. Sabdat Ekama | Pre-Doctoral Research Development Grant | 1 year | 1NIMR-PRDG-0003-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 2 | Mr. Femi Amoo | Pre-Doctoral Research Development Grant | 1 year | 1NIMR-PRDG-0004-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 3 | Mr. Yisau Jacob | Pre-Doctoral Research Development Grant | 1 year | 1NIMR-PRDG-0005-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 4 | Mr. K. Adeneye | Pre-Doctoral Research Development Grant | 1 year | 1NIMR-PRDG-0006-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 5 | Mrs. Ajoke Adagbada | Pre-Doctoral Research Training / Travel Grant | 1 year | 1NIMR-PRTG-0007-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 6 | Dr. Wapmuk Agatha | Pre-Doctoral Research Development Grant | 1 year | 2NIMR-PRDG-0009-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 7 | Mrs. Kunle-Ope Chioma | Pre-Doctoral Research Development Grant | 1 year | 2NIMR-PRDG-0011-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 8 | Dr. Gab-Okafor Chidinma | Pre-Doctoral Research Development Grant | 1 year | 2NIMR-PRDG-0015-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 9 | Mrs Afocha Ebelchukwu E. | Pre-Doctoral Research Development Grant | 1 year | 2NIMR-PRDG-0016-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 10 | Mrs. Fehintola Ige | Pre-Doctoral Research Development Grant | 1 year | 2NIMR-PRDG-00-18-01 | 500,000.00 | On-going | FGN/NIMR |
| 11 | Ms. Holdbrooke, S. | Pre-Doctoral Research Development Grant | 1 year | | 500,000.00 | On-going | FGN/NIMR |

| | | | | | | | |
|----|-----------------|---|--------|--|------------|----------|----------|
| 12 | Ms. Awoderu, O. | Pre-Doctoral Research Development Grant | 1 year | | 500,000.00 | On-going | FGN/NIMR |
| 13 | Mr. Orok | Pre-Doctoral Research Development Grant | 1 year | | 500,000.00 | On-going | FGN/NIMR |

NIMR Ongoing Grants 2019/2020 (Internal (Senior Category))

| S/N | PRINCIPAL INVESTIGATOR (PI) | GRANTS TITLE | GRANTS PERIOD | GRANT NUMBER | AMOUNT (₦) | STATUS | DONOR |
|-----|-----------------------------|--|---------------|--------------------|--------------|----------|----------|
| 15 | Prof. Smith | Environmental assessments of antimicrobial resistance genes (ARGs) and antimicrobial resistant bacterial (ARB) from waste effluents and soil of livestock farms in Lagos state, Nigeria. | 2 years | | 5,000,000 | New | FGN/NIMR |
| 16 | Dr. Rosemary Audu | Grant for Polio and Arbovirus Research II | 1 year | 2NIMRGA-0017-19-02 | 5,000,000.00 | On-going | FGN/NIMR |
| 17 | Dr. Muinah Fowora | Innovative Grant for the Development of Biotech DNA Purification Kit | 1 year | 2NIMRGA-0028-19-01 | 2,000,000.00 | On-going | FGN/NIMR |
| 18 | Dr. NN Odunukwe | Research Innovation and Product Unit (RIND) | Continuous | 2NIMRGA-0014-18-01 | 1,500,000.00 | On-going | FGN/NIMR |
| 19 | Dr. Oluwagbemiga Aina | Grant for Alternative Medicine Research II | 1 year | 2NIMRGA-0016-19-02 | 2,000,000.00 | On-going | FGN/NIMR |

| | | | | | | | |
|----|------------------|--|--------|--------------------|---------------|----------|----------|
| 20 | Dr. Agatha David | Mapping and Initial Demographic and Health survey of Ijede, Ikorodu Lagos, Nigeria | 1 year | 2NIMRGA-0016-19-02 | 10,000,000.00 | On-going | FGN/NIMR |
|----|------------------|--|--------|--------------------|---------------|----------|----------|

NIMR Ongoing Grants (Internal/ INNOVATIVE GRANTS)

| S /N | PRINCIPAL INVESTIGATOR (PI) | GRANTS TITLE | GRANTS PERIOD | GRANT NUMBER | AMOUNT (₦) | STATUS | DONOR |
|------|-----------------------------|--|---------------|--------------------|---------------|----------|----------|
| 21 | Prof. Rosemary Audu | Grant for Polio and Arbovirus Research II | 1 year | 2NIMRGA-0017-19-02 | 5,000,000.00 | On-going | FGN/NIMR |
| 22 | Dr. Muinah Fowora | Innovative Grant for the Development of Biotech DNA Purification Kit | 1 year | 2NIMRGA-0028-19-01 | 2,000,000.00 | On-going | FGN/NIMR |
| 23 | Dr. NN Odunukwe | Research Innovation and Product Unit (RIND) | Continuous | 2NIMRGA-0014-18-01 | 1,500,000.00 | On-going | FGN/NIMR |
| 24 | Dr. Oluwagbemiga Aina | Grant for Alternative Medicine Research II | 1 year | 2NIMRGA-0016-19-02 | 2,000,000.00 | On-going | FGN/NIMR |
| 25 | Dr. Agatha David | Mapping and Initial Demographic and Health survey of Ijede, Ikorodu Lagos, Nigeria | 1 year | 2NIMRGA-0016-19-02 | 10,000,000.00 | On-going | FGN/NIMR |

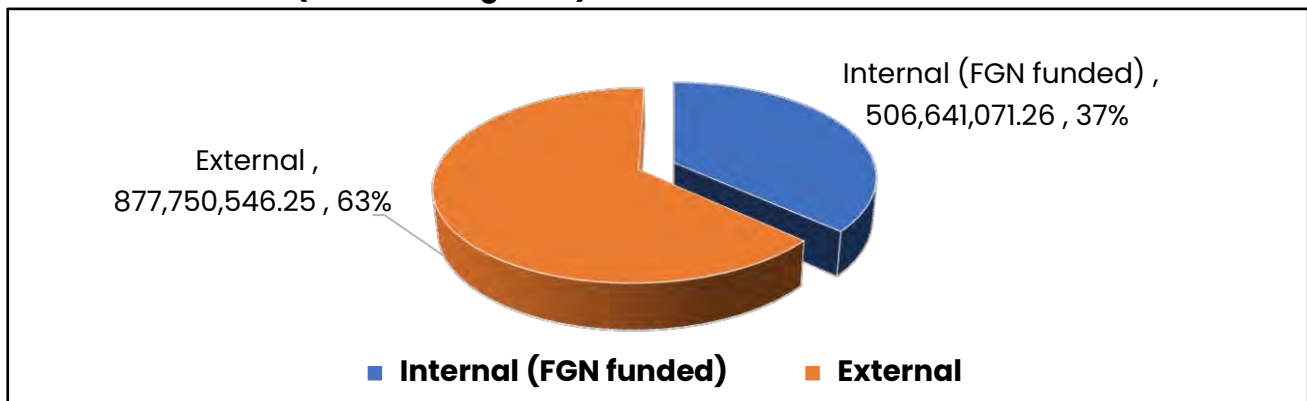
INTERNAL GRANTS 2017-2021

| | 2017 | 2018 | | 2019 | | 2020 | | 2021 | | Total |
|--------------------------|----------|------|-----------|------|-----------|------|-----------|------|-----------|------------|
| | | #R | #A | #R | #A | #R | #A | #R | #A | #A |
| Pre-Doc | 0 | 9 | 8 | 9 | 9 | 5 | 2 | 3 | 1 | 20 |
| Post-Doc | 0 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 5 |
| Junior Category | 0 | 14 | 3 | 21 | 4 | 13 | 5 | 6 | 3 | 15 |
| Senior Category | 2 | 11 | 4 | 7 | 0 | 11 | 4 | 5 | 1 | 11 |
| Innovative Grants | 0 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 5 | 12 |
| COVID Intervention funds | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 32 |
| Departmental grants | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 | 9 |
| Total | 2 | | 20 | | 18 | | 12 | | 52 | 104 |

Summary for 2021

| TYPE | AMOUNT IN NAIRA | AMOUNT IN DOLLARS | AMOUNT IN POUNDS | AMOUNT IN EUROS | NUMBER OF GRANTS |
|------------------------------|-----------------------|---------------------|------------------|-------------------|------------------|
| External-Ongoing and New | 390,820,546.25 | 1,002,387.68 | 51,238.14 | 142,929.70 | 42 |
| Internal New (2020) | 27,000,000.00 | 0 | 0 | 0 | 11 |
| Covid-19 Interventional fund | 459,930,000.00 | 0 | 0 | 0 | 45 |
| Total | 877,750,546.25 | 1,002,387.68 | 51,238.14 | 142,929.70 | 98 |

External Vs Internal (FGN funded grants)



Achievements

- Attracted more new grants both within and outside the country (BMGF, TETFUND, NIH as prime etc.)
- Included funding for Adjuncts, however in collaboration with NIMR researchers
- Successfully Conducted the 2021 rounds of call
 - Pre and Post Doc completed and awarded
 - Junior Category awaiting feedback from 1 reviewer
 - Senior Category -awaiting feedbacks from 3 external reviewers
- Awarded 95 internal grants to NIMR Researchers in the last 4 years
- Nigeria through NIMR was listed as a member of the Belmont Forum - International transdisciplinary research providing knowledge for understanding, mitigating and adapting to global environmental change. 6 Nigerians accessed the funds this year

Challenges

- Poor Internet connectivity- Most of our activities are online, once there is no/poor connectivity this limits our productivity
- Inadequate manpower- This has grossly limited the activities of the Unit in practically all the activities of the Unit
- Data Management harmonization- Need to have a robust DB Management system to house all research data generated and data generated in-house
- Some Researchers still don't notify the Grant Unit officially when they get grants hence (no documentation for such)- makes it difficult to generate timely report and providing correct information on the grants available in the Institute
- Non-Submission of progress reports for external grants
- Delays on notification of inflow of external grants
- Need for grant management software to manage grant management cycle
- Tools to support proposal development (Grammarly, Turnitin)

Way forward

- Utilize effectively the new collaborations
- Re-organize work schedule/time management to improve productivity
- Employment of additional competent staff and increase training opportunity for staff (Statisticians and grant experts)
- DG has directed that at least all FGN funded projects should now be backed up on REDCap - Research Fellows should comply
- Development of an Institutional data sharing, use and transfer; grant management policy - ongoing
- Need for Researchers to always notify Grant Unit of their new awards - system in place for this
- Encourage Grantees to provide periodic submission of progress report of ongoing grants (both internal and external)
- Continuous documentation of all NIMR grants both internal and external
- Continuous maintenance of all grants access/management platforms
- Obtain a software for grants management
- Develop robust Data Management system to address the needs of the Institute
- Possibility of getting an Independent Consultant to go over our proposals before submission

INTERNAL AUDIT UNIT

INTERNAL AUDIT ACTIVITIES

INTRODUCTION

The Internal Audit Unit of Nigerian Institute of Medical Research, Yaba is responsible for the internal checks of the Institute's accounts and those for the Out-Stations.

The main purpose of Audit is to enable the Internal Auditor satisfy the Director-General/CEO that an efficient and effective system of Internal Control (internal check, security and control of cash and stores, assets etc.) and adequate system of accounting as laid down by Financial Regulations and other financial extant circulars are maintained and the books reconciled.

The ultimate aim is to ensure that all accounts and vouchers prepared or received are complete themselves. It should also in addition to the normal

auditing process, examine the internal control, security measures, spot checks thereby satisfying itself that adequate measures exist and regulating system are observed.

ACHIEVEMENTS

- Errors/loopholes were ruled out to a very large extent.
- Supplies to the Institute are in good conditions as at the time of delivery.
- All generated revenue were duly posted to NIMR CBN Account
- All due processes of payments were followed.
- Numbering and labelling of NIMR assets
- Audit verification of IGR by way of reporting on all the revenue centres

CAPACITY BUILDING

| S/N | NAME | POSITION | TRAINING | Course Title | DATE |
|-----|----------------------|-------------------------------------|-----------------|--|-----------------------|
| 1 | Mrs. T. A. Malomo | Deputy Director/HOU (IA) | ICAN Conference | Trust in Governance | Nov 28 - Dec. 3, 2021 |
| 2 | Mrs. M.A. Akhigbe | Asst. Chief Executive Officer | CMD, Shangisha | Auditing in Public and Private Sector Organisation | October 18-22, 2021 |
| 3 | Mr. K.O. Ologwu | Principal Accountant | ASCON Badagry | Public Sector Auditing | November 13-26, 2021 |
| 4 | Mrs. F.M. Okusaga | Principal Executive Officer II | ASCON Badagry | Auditing and Investigation | December 6-10, 2021 |
| 5 | Mrs. J. T. Usen | Chief Secretariat Assistant | ASCON Badagry | Effective Secretarial Office Management. | July 5-9, 2021 |
| 6 | Mr. D. Egwu | Senior Accountant | ASCON Badagry | Public Sector Auditing | November 13-26, 2021 |
| 7 | Mrs. F. Adebayo | Senior Accountant | CMD, Shangisha | Auditing in Public and Private Sector Organisation | October 18-22, 2021 |
| 8 | Mrs. O.F. Akintomide | Higher Executive Officer (Accounts) | ASCON Badagry | Auditing and Investigation | June 7-11, 2021 |
| 9 | Mr. G.N. Stephen | A.E.O. (Accounts) | ASCON Badagry | Auditing and Investigation | June 7-11, 2021 |
| 10 | Mrs. J. Obi | Senior Clerical Officer | ASCON Badagry | Effective Secretarial Office Management. | July 5-9, 2021 |

NYSC/IT STUDENT/INTERN

The Internal Audit Unit had two (2) corps members in 2021. Miss Winifred K. Ojobo and Mr. Idris Faniran. Miss Ojobo completed her service with the Unit in November, 2021, while Mr. Faniran is still with the Unit till October, 2022.

CHALLENGES

1. Staff failing to retire advance(s) as at when due, thereby causing the Unit to waste scarce human hours chasing Staff
2. Shortage of skilled manpower.
3. Inadequate training opportunities

WAY FORWARD

- Auditors are appealing to Director-General/CEO to use his good office to look into our challenges mentioned above.
- Auditors are also appealing for more training for staff.

WORK PLAN FOR 2022

- The Internal Audit plans to liaise with the Scientific Research Committee to use the platform of their research seminars to enlighten staff on some pitfalls in the course of vouching of payment vouchers and other activities that include imprest expense, supplies, raising of requisition, etc.
- The Internal Audit plans the numbering of project assets in the Institute.
- The Internal Audit is currently designing a form for Asset movement to use for relocation and disposing off of Asset.
- Continue our routine audit processes

INSTITUTIONAL REVIEW BOARD

NIMR–Institutional Review Board receives, reviews, approves research proposals and monitors studies to protect the rights and welfare of human subjects in compliance with ethical rules, regulations and policies. The Secretariat coordinates the activities of the Board in ensuring timely processing and approval of submitted proposals.

MEETINGS

NIMR–IRB held a total of three meetings during the year under review as stated below:

- March 22nd, 2021
- July 16th, 2021
- Sept 23rd, 2021

RESEARCH PROPOSALS RECEIVED AND APPROVED IN 2021

A total of ninety (90) proposals were received by NIMR–IRB in the year 2021. The research proposals reviewed and approved within the set turnaround time of six (6) weeks were of four categories:

- NIMR Staff Protocols: (55)
- Non NIMR Staff (individuals) protocols: (4)
- NGO/CSO and multinational organizations protocols: (9)
- Students from various universities and polytechnics: (30)

COLLABORATIONS

The Board collaborated with the following organizations and bodies:

- New HIV and Microbicides Advocacy Society (NHVMAS)
- National Health Research Ethics Committee (NHREC)
- Federal Medical Centre (FMC), Ebute-Metta

CHALLENGES

- Undue delay of protocol reviews
- Poor knowledge of researchers on good research and ethics practices

WAY FORWARD

- Automation of the IRB process
- Organize more training on research ethics

WORK PLAN

- Capacity building of members and researchers
- Computerization of administrative/secretariat procedures
- Increase awareness on ethics of good research practice

PROFILE OF NIMR-INSTITUTIONAL REVIEW BOARD MEMBERS

| S/N | Names | Earned degree(s) | M/F | Profession | Role | Organization | Position on Board |
|-----|---------------------|------------------|-----|-----------------------------|-------------------------------------|-------------------------|---------------------|
| 1. | Prof. O.C. Ezechi | MD, MSc, PhD | M | Gynecologist & Obstetrician | Clinician | NIMR, Yaba. | Chairman |
| 2. | Dr. O.O. Aina | PhD | M | Pharmacologist | Scientist | NIMR, Yaba. | Member |
| 3. | Dr. A.G. Ohihoin | MD | M | Gynecologist & Obstetrician | Clinician | NIMR, Yaba. | Member |
| 4 | Dr. O. Kareem | MSc | F | Veterinarian | Scientist | NIMR, Yaba. | Member |
| 5. | Barr. N. Nnamdi | L.LB | M | Lawyer | Community Representative | NIMR, Yaba. | Member |
| 6. | Dr. C.K. Onwumah | PhD | F | Virologist | Scientist | NIMR, Yaba. | Member |
| 7. | Mrs. A.E.N Okoye | MPA | M | Administrator | Social Scientist | NIMR, Yaba. | Member |
| 8. | Dr. K. Osuolale | PhD | F | Biostatistician | Statistician | NIMR, Yaba. | Member |
| 9. | Dr. A.N. David | MD | F | Paediatrician | Clinician | NIMR, Yaba. | Vice Chairman |
| 10. | Rev. Ariire Bankole | | M | Cleric | Religious person | Anglican Church, Lagos. | Member |
| 11. | Dr. O.A. Nwogbe | PhD | F | Information Scientist | Secretary | NIMR, Yaba. | Secretary |
| 12. | Dr. T.Y. Raheem | PhD | M | Med. Lab. Scientist | Med Microbiology | NIMR, Yaba. | Member |
| 13. | Imam B.A.T. Lawal | MSc | M | Imam/ Financial Consultant | Religious person | Haflays Nig. Ltd. | Member |
| 14. | Dr. T. Bamidele | PhD | M | Microbiologist | Pharmaceutical Medical Microbiology | NIMR, Yaba. | Assistant Secretary |
| 15. | Ms. I. Idigbe | MSc | F | Sociologist | Sociologist | NIMR, Yaba. | Member |
| 16 | Dr. B. Adewale | PhD | M | Ethicist | Ethicist | NIMR, Yaba. | Member |
| 17 | Dr. B.O. Awoyomi | MD/F | M | Orthopedic Surgeon | Medicine | FMC, Ebute-Metta. | Member |
| 18 | Dr. S.A. Ogume | PhD | | Gynecologist & Obstetrician | Clinician | FMC, Ebute-Metta. | Member |
| 19 | Dr. E. Chukwu | PhD | | Medical Microbiologist | Scientist | NIMR, Yaba. | Member |

LIBRARY AND INFORMATION COMMUNICATION TECHNOLOGY DEPARTMENT

The recent transnational health crisis triggered an unprecedented reliance on ICTs, compelling the most transformational working arrangement of our times. More than ever before, ICTs skills now matter most to navigate the realities of the contemporary work ecosystem. Globally, organizational work structure or scholarship leverage on ICTs as strategic resources to do things better, faster and farther in forging connections and collaborations across boundaries. As technology usage becomes pervasive,

individuals and entities are progressively generating huge digital content and digital footprints.

The Library and ICT Department is poised to offer digital services by acquiring high-end intelligent digital equipment in 2021. The equipment are industrial document scanner, overhead book scanner and digital identity card printer. The purpose is to facilitate digital content creation, use, exchange, storage and preservation.



Intelligent High Speed ADF Document Scanner

Superior image quality and data accuracy.
Duplex Scanning
Scanning format: ≤A4, 216 x 3000 mm.
Image/Export format: JPG, PDF, Searchable PDF, Word, Excel, TIFF
Scan Speed: 70 ppm.
Output color Depth: 24 Bit.



Smart Book Scanner

Superior image quality and data accuracy.
Scanning format: ≤A3, 420 × 297mm, 16.5×11.7 inch
Scan materials: Documents, Books, Magazines, Forms, & Sculpture
Image/Export format: JPG, PDF, Searchable PDF, Word, Excel, TIFF
18 megapixels



High Definition Printing

Secure smart card printer
Direct-to-Card Printers
Dual-sided printing
Highest image quality layered
Resolution: 300 dpi (11.8 dots/mm)
Colors: Up to 16.7 million / 256 shades per pixel
Output Hopper Card Capacity: 200 cards (.030"]/.762 mm)

Activities

The Library and ICT Department supported research and non-research activities of the Institute through:

- Health information gathering, management, and dissemination.
- Provision of computer, internet, and other related technical support.
- Content development and management of the Institutional website and the Social Media handles.
- Documentation and production of NIMR publications and other information materials.
- Desktop publishing.
- Web content development.
- ICT Training.

Achievements

- Subscription/renewal of HINARI Database.
- Acquisition of digital equipment such as industrial book & document scanners to kick-start the digitization of Library resources in 2022.
- Extension of fiber optic internet connection to the E-Library building, Research Lab, CHVG and residential quarters.
- Improved NIMR social medial contents, presence, and visibility.

Challenges

- Inadequate funding to subscribe to biomedical information e-resources.
- Inadequate funds to implement Digital Library System.
- Inadequate working tools (Laptops and Desktops).

Way Forward

- Fund to implement digital library system.
- Acquisition of additional working tools (Laptops and Desktops).

2022 Work Plan

- Digitizing library services
- Provide digital services
- Provide computer and internet services
- Increase NIMR social media content and visibility
- Subscription to HINARI and other research-assisted e-resources.
- Extending internet and network linkages with fiber optics to new buildings.
- Conduct ICT trainings
- Provide multimedia support to events in NIMR

PLANNING DEPARTMENT

INTRODUCTION

Planning Department is essentially responsible for the articulation, analysis, projection and implementation of development plans of the organization in terms of annual, medium and long term plans.

The Department is to provide accurate and reliable information for effective planning and ensuring that due process is followed in the execution of the programmes and projects in the Institute.

In addition, the Department performs the following functions/ responsibilities.

- Coordination of the Institute's strategic development plans.
- Coordinate the implementation of the strategic plans. This involves monitoring the implementation of plans in collaboration with Grant, Monitoring & Evaluation Unit through joint annual reviews, mid-term reviews and periodic evaluation.
- Producing annual reports of Research and Non-Research activities in the Institute.
- Planning of the Institute's programmes, projects and activities like annual retreats, conferences, etc.
- Liaising with relevant bodies and organizations outside NIMR on policy and planning matters for relevant updated information for the notification of the Management.

ACTIVITIES

Activities of the Planning Department in 2021 include:

- Coordinated the drafting of the proposed Institute's five-year strategic plan (2022 - 2026) in conjunction with the Committee on NIMR Strategic Plan.
- Compiled the Institute's training needs and forwarded same to the Director-General for inclusion in the 2022 training schedule of the Institute.
- Collaborated with the Finance/Accounts Department in facilitating meetings with other Agencies/Parastatals on the Budget Process Reforms of the Federal Ministry of Health.
- Participated in the capacity building workshop for the Agencies and Parastatals in the Health Sector on Budget Performance Monitoring. This was to ensure easy accessibility to the level of implementation on programmes and projects executed within the stipulated appropriation year.
- Compiled reports of activities from the Departments/Units in the Institute. This was done monthly in order to highlight the achievements of each Department/Unit including their challenges and the way forward.

ACHIEVEMENTS

- Since its creation, the Department worked successfully with the Institute's Strategic Plan Development Committee in the review of the 2017–2021 Strategic Plan and the development of 2022–2026 Strategic Plan document.
- The Department successfully compiled and analyzed the training needs of staff in the Institute for 2022 training schedule.

CAPACITY DEVELOPMENT

During the year under review, members of staff of the Department attended various trainings/workshops/conferences/symposia/meetings sponsored by the Institute as shown below:

| S/N | NAME | TRAININGS/ WORKSHOPS/ CONFERENCES /SYMPOSIA /MEETINGS ATTENDED | VENUE | DATE |
|-----|--|---|---------------------|------------|
| 1. | Mr. P.O. Ejiga Director of Planning | Workshop on Strategic Plan Development & Implementation | Topo-Badagry, Lagos | 21-25/6/21 |
| 2. | Mr. P.O. Ejiga Director of Planning | One-day Inception meeting for the Technical Working Group for full Operationalization of NH ACT 2014. | Mabushi, Abuja | 15/10/21 |
| 3. | Mrs. G.A. Charles Prin. Conf. Sec. I | Workshop on Effective Secretarial & Office Mgt. | Topo-Badagry, Lagos | 5-9/7/21 |
| 4. | Mr. R.N. Iwegbu Principal Exec. Officer II (GD) | Workshop on Strategic Plan Development & Implementation | Topo-Badagry, Lagos | 9-13/8/21 |
| 5. | Mr. R.N. Iwegbu Principal Exec. Officer II (GD) | One-day Inception meeting for the Technical Working Group for full Operationalization of NH ACT 2014. | Mabushi, Abuja | 15/10/21 |
| 6. | Mrs.N.A. Ako-Okoli Snr. Admin Officer | Workshop on Strategic Plan Development & Implementation | Topo-Badagry, Lagos | 9-13/8/21 |

CHALLENGES

- Inadequate complement of staff: The Department lacks the appropriate complement of staff in the middle level cadre to be able to perform its functions.
- Most functions of the Department are domiciled in other Departments/Units. The challenge here is the harmonization of those areas which are complementary in order to have the plans working together for the achievement of an overall strategic objective.

WAY FORWARD

- The need for a clear delineation of the scope of the responsibilities and streamline the functions of the Planning Department.
- The need to constitute a Central Monitoring and Evaluation Committee for the Institute with members drawn from Departments/Units with related monitoring functions as well as a representative from the project implementing department. Such a Committee will have the responsibility for monitoring the execution of projects as well as evaluate the outcome of such initiatives and advise the Management accordingly.
- To ensure the availability of appropriate complement of essential/skilled personnel. This will enhance the Department's capacity to grow and function efficiently and effectively.

2022 WORK PLAN

- Coordinate the implementation of the strategic plan
- Regular monitoring and review of the implementation of the strategic plan
- Training of staff for better understanding and increased capability to develop an implementable plan
- Liaise with relevant ministries on policy and planning matters for relevant updated information for the use of Management

PROCUREMENT UNIT

INTRODUCTION

The Procurement Unit was created in the year 2012 to carry out the Institute's Public Procurement functions in accordance with the Public Procurement Act, 2007 which promulgates the establishment of institutions, policies and procedures governing and regulating public procurements in Nigeria, in particular, government Ministries, Departments and Agencies (MDAs), as well as other entities outside the foregoing which derive at least 35% of the funds appropriated or proposed to be appropriated for any type of procurement described in the Act from the Federation share of Consolidated Revenue Fund, except special procurements involving national defense or security, which requires the President's express approval.

The Unit is responsible for acquisition of goods, works and services - consultancy and non-consultancy for the Institute through contracts on behalf of Federal Government for the purposes of national development. In broader term, it serves as a channel through which government buys inputs for vital public-sector investments - both in physical infrastructure and in strengthened institutional and human capacities that lay the foundations for national development. This function is carried out in strict adherence

or in accordance with the Public Procurement Act, 2007.

OBJECTIVE OF THE UNIT

The cardinal objective of the Procurement Unit is to support the Institute, as a government agency for national development, in achieving her goals and objectives as envisaged in her vision and mission statements through effective and efficient procurement process thereby ensuring prudent use of public funds while rigorously maintaining the Institute's business principles and mandate and the agreements under which it operates.

IMPORTANCE OF PUBLIC PROCUREMENT IN NIMR

The quality, timeliness, suitability and affordability of these procured inputs as mentioned earlier, can largely determine whether the public investments in NIMR will succeed or fail. And although the beneficial impacts and contributions of these inputs in the Institute in the long run, in most cases can exceed their direct costs, yet, procurement costs can be substantial, consuming scarce resources of tightly constrained government budgets - often leading to external borrowings to meet the required funding.

CHALLENGES

- Improper presentation of requests by the end-users;
- Partial release or delay in the release of budget;
- Delay in getting necessary approvals from government;
- Insufficient staff.

WAY FORWARD

- Proper enlightenment of end-users on procurement procedures;
- Reducing unnecessary bureaucracies will result to quick implementation of projects;
- Officers responsible for processing of payments to contractors should strive to expedite actions;
- Adequate staffing of the Unit will enhance the performance of its functions;
- Early preparation of budget;

2022 WORK PLAN

| S/N | ACTION | TIME-LINE |
|-----|---|---|
| 1. | Preparation and submission of 2022 Procurement Plan and budget by the Procurement Planning Committee; Consideration, ratification and approval of the 2022 Procurement Plan by the Tenders Board. | 2 nd January to 31 st March, 2022 |
| 2. | Advertisement, Pre-qualification, Bid opening and Evaluation (Technical & Financial), BPP 'No Objection' | 1 st April to 31 st July, 2022 |
| 3. | Submission of Report, Tenders Board approval, Award of Contract, Signing of Contract Documents/Execution, Project Implementation & Monitoring, Certification, Handing over & Commissioning. | 1 st August to 31 st December, 2022 |

The process also consumes scarce skilled public-sector human resources. It takes time, not merely for procurement planning and contracting but also for contract supervision, execution and management.

Public Procurement is therefore, important in this regard, because it has a direct impact on how much the Institute can save or get from the government. The process is responsible for evaluating contractors, suppliers and service providers, products and services, negotiating contracts and ensuring that approved procurements are cost-efficient and of high quality. Its top priority is to lower costs which is by far the primary function of the procurement, improve quality, reduce risk and ensure the security of procured inputs, manage relationships, pursue innovation and leverage on technology. This is viewed as a strategic function working to streamline the process and improve government's developmental efforts through the Institute.

ROLES OF THE PROCUREMENT UNIT

In view of the foregoing, the Procurement Unit is constantly engaged in procurement activities aimed at expediting the achievement of the Institute's cardinal objectives while obtaining the best possible value for money on behalf of the Federal Government by ensuring that goods, works and services (inputs) needed by the Institute are acquired at the most favorable terms compatible with the desired quality and delivery schedules, taking into account the

total life cycle costs and in a manner that safeguards and preserves the reputation of the Institute.

The aforementioned encompasses the nine (9) essential procurement steps imbibed by the Unit, of efficient procurement plan driven by needs assessment; appropriation; advertisement; transparent pre-qualification; bid opening; bid evaluation (Technical and Financial); necessary approvals; contract award and execution; as well as project implementation.

ACHIEVEMENTS/EXTENT OF IMPLEMENTATION OF THE 2021 CAPITAL BUDGET

The Procurement Unit has supported the Institute's goals and objectives through an understanding of the Institute's business requirements or mandate by identifying and procuring the critical inputs required to pursue her policies and programs of nation building through effective and efficient management of the procurement process and the supplies market, coupled with strong relationships with other Departments/Units and relevant external bodies for better understanding and harmonious work towards achieving the set objectives of the Public Procurement Act 2007, extant laws, guidelines and regulations.

RESEARCH, INNOVATION & PRODUCT DEVELOPMENT (RIND) UNIT

MISSION STATEMENT

To Deploy Research Innovations towards Addressing Public Health needs for Biomedical Products and Interventions.

VISION STATEMENT

To Transform Research ideas into end Products of Value for National Development

TECHNICAL/ PRODUCTION TEAM

| | |
|---------------------|-----------------------------|
| Prof. N.N. Odunukwe | - Director of Research |
| Dr. A.G. Ohihoin | - Deputy-Director, Research |
| Dr. C.K. Onwuamah | - Chief Research Fellow |
| Dr. N.N. Onyejepu | - Senior Research Fellow |
| Dr. J.O. Okwuzu | - Research Fellow I |
| Dr. M.A. Fowora | - Research Fellow I |
| Dr. O.S. Amoo | - Research Fellow I |
| Mr. A.B. Orok | - Research Fellow II |
| Mr. A.K. Adeneye | - Research Fellow II |
| Dr. N.M. Otuonye | - Deputy-Dir Lab. Sci |
| Mr. P.I. Ogbuji | - Senior Biomedical Engr |
| Mr. J.K. Omowhovo | - Equip Prod Technician |
| Mrs. A.T. Asemota | - Chief Clerical Officer |

INTRODUCTION:

Currently the changing paradigm focuses on translation of research ideas into tangible products and services. This will boost growth and create jobs and opportunities. The Research Innovation and Product

Development (RIND) Unit of the Nigerian Institute of Medical Research (NIMR), focuses on identification of gaps in laboratory and diagnostic needs, devices local innovative means of filling the gap to stop over-dependence on importation.

The overall goal is to provide in-country solutions as a replacement to over-dependence on importation, hence promotion of national economic growth. This manifested clearly during the COVID-19 pandemic country border closures.

As would be expected, the renaissance of industrial and institutional growth, self-dependence and development is already brewing up for ultimate manifestation. The Nigerian Institute of Medical Research RIND Unit established in 2017 was geared towards translation of research ideas through creative and quality innovations into affordable medical products and services.

Operational dynamics of research and development (R&D) is a multifaceted affair which ranges from conceptualization, experimentation, actual product development to validation. **NIMR-RIND works towards a paradigm shift in diagnostic needs of Nigerians** through the production of **"Proudly Nigerian Products and Proudly NIMR BIOTECHNOLOGICAL Products and Services"**.

Objectives of RIND

- A. To identify gaps in medical diagnostic, drugs and vaccine needs and produce such locally
- B. To create avenues to nurture innovative ideas towards products development
- C. To validate and conduct quality controls on produced products
- D. To create channels for research products commercialization
- E. To provide support for applications by innovators and inventors for the protection of the property rights of Innovations/inventions

RESEARCH ACTIVITIES: (COMPLETED AND ON-GOING):

- Re-designing and Packaging of NIMR BIOTECH Products: One unique feature of engineering products and design is that each product must resemble one another in size configuration of width, depth and height with clear identity.
- Finalising the patent document for the DNA extraction kit
- A working product for SARS-CoV-2 and finalizing trials for the febrile illness assays
- Stakeholder engagement with National Tuberculosis and Leprosy Control Programme (NTBLCP) on the NimCure program.
- Finalized SARS-CoV-2 product. A working prototype for the febrile illness assays.
- Dissemination of Findings, publication in a peer-review journal.

ACTIVITIES ENVISAGED:

- Getting the unique 3-dimensional geometry right ranging from reagent bottles, housing configuration for machines to packaging.
- Experiment, Design and Develop a **Digital Oven and Incubator** in addition to what we have presently
- Experiment, Design and Develop a **Digital Colorimeter** for blood chemistry analysis
- Re-design Packaging for Cartons and Reagent Bottles
- Patenting, Licensing and Product registration with relevant authorities
- More Validation and Product Testing in health centres across the country
- Re-designing and Packaging of product NIMR-BIOTECH Prod
- SOP Design & Development of Policy document
- Grant, writing Resource mobilisation & Publications
- Production of more Reagents & laboratory Consumables

2.0 ACHIEVEMENTS:

- Conceptualization & Development of Medical Products.
- The patenting of the RNA extraction Kit was concluded
- Nimcure program accomplished successful treatment outcome amongst the participants.
- Final commercialization of NIMR SARS-CoV-2 Detection Assay (SCODA)

- Measurable progress on the process of establishment of patent office in NIMR
- Completion of validation of some of RIND products
- Submission of manuscripts for publication

2.1 CONCEPTUALIZATION & DEVELOPMENT OF MEDICAL PRODUCT AND SERVICES.

2.1.1. Medical Equipment:

- NIMR BIOTECH-Electrophoretic Machines Model I&II,
- NIMR BIOTECH-Hematocrit Centrifuge
- NIMR BIOTECH -Biological Incubators
- NIMR BIOTECH-Laboratory fitted Oven
- NIMR BIOTECH-Bucket Centrifuge

2.1.2. Reagents & laboratory Consumables

- NIMR BIOTECH- Haemoglobin Genotype buffer
- Assorted stains, Normal/Buffered saline


2.1.3 Diagnostic Kits:

- NIMR BIOTECH- DNA/RNA extraction kits:
- NIMR BIOTECH NimCure Project.
- NIMR BIOTECH Covid-19 SIMA Testing Kits
- NIMR BIOTECH POC-PCR Panel for febrile illness detection

2.1.4. RIND SERVICES: Repairs, Servicing of Medical Equipment in NIMR.

2.2: The patenting of the RNA extraction Kit was concluded

2.2: The patenting of the RNA extraction Kit was concluded



PATENT FORM NO. 4
CRP : 006080

FEDERAL REPUBLIC OF NIGERIA
Certificate of Registration of Patent
(Patents and Designs Act; CAP 344 Laws of the Federation of Nigeria 1990)

RP: NG/PT/NC/2021/5288
Date of Patent: 19/04/2021
Date of Sealing: 07/06/2021

PATENTS AND
DESIGNS ACT

President of the Federal Republic of Nigeria and Commander-in-Chief of the Armed Forces
MUHAMMADU BUHARI, GCFR.

Whereas a request for the grant of a patent has been made by: **NIGERIAN INSTITUTE OF MEDICAL RESEARCH; MUNAILA FOWORA of MEDICAL COMPOUND, 6 EDUND CRESCENT YABA, LAGOS C/O ABAH of B11 POLY PLAZA, WUSE II, ABUJA.**

For the sole use and advantage of an invention for: **NIMR BIOTECH TOTAL RNA EXTRACTION KIT**

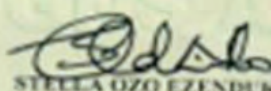
AND WHEREAS the Federal Government being willing to encourage all inventions which may be for public good, is pleased to accede to the request:

KNOW YE THEREFORE, that I do by this Instrument give and grant unto the person(s) above named and my successor(s), executor(s), administrator(s) and assignee(s) (each and any of whom are hereinafter referred to as the patentee) by special licence, full power, sole privilege and authority, that the patentee or any agent or licensee of the patentee may subject to the conditions and provisions prescribed by any statute or order for the time being in force at all times hereafter during the term of years herein mentioned, make, use, exercise and vend the said invention throughout the Federal Republic of Nigeria, and that the patentee shall have and enjoy the whole profit and advantage from time to time accruing by reason of the said invention during the term of twenty years from the date first above written on this instrument: AND to the end that the patentee may have and enjoy the sole use and exercise of the full benefit of the said invention, I do by this instrument strictly command all citizens of the Federal Republic of Nigeria that they do not at any time during the continuance of the said term either directly or indirectly make use of or put in practice the said invention, nor in anywise imitate the same, without the written consent, licence or agreement of the patentee, on pain of incurring such penalties as may be justly inflicted on such offenders, and of being answerable to the patentee according to law for damages thereby occasioned:


PROVIDED ALWAYS that this patent shall be revocable on any of the grounds from time to time by law prescribed as grounds for revoking patents granted by me, and the same may be revoked and made void accordingly.

PROVIDED ALSO that nothing herein contained shall prevent the granting of licences in such manner and for such considerations as they may by law be granted

MADE this 7th DAY of JUNE, 2021


STELLA OZO EZENDUKA
Registrar

PATENTS AND
DESIGNS ACT



2.3 Nimcure program accomplished successful treatment outcome amongst the participants.

2.4 OTHER ACHIEVEMENTS: PRODUCT VALIDITY TESTING

2.4.1 RIND carried nation-wide validation of diagnostic accuracy and performance of NIMR-made electrophoretic machine in determination of haemoglobin genotypes in Nigeria

This study was carried out to validate the performance characteristics of NIMR-made electrophoretic machine for hemoglobin determination using standard machines currently in use in respective medical facilities in **Lagos, Sokoto, Osun, Enugu and Kaduna** States. Of all the parameters evaluated (Time of band separation, Neatness of band separation, Accuracy of band separation, Consistency of band separation), the Sensitivity and Specificity between NIMR-made electrophoretic machine and those used by the centers (foreign made brands) was 100%.

2.4.2 Validation of Efficacy of NIMR Biotech DNA Extraction kits for Diagnostic Accuracy and Performance. The study was conducted in Lagos and Osun States: Nigerian Institute of Oceanography & Marine Research, Victoria Island, Lagos, The Department of Cell Biology, University of Lagos and The University of Ife. The choice of facilities was based on high standard of services, the availability of a standard molecular laboratory, and access to different specimen. Again, reports from these centers showed a 100% performance agreement between NIMR-BIOTECH DNA extraction kits and most

of highly rated DNA extraction kits imported into the country.

RNA extraction kits patenting was concluded.

- Final Commercialization of NIMR SARS-CoV-2 Detection Assay (SCODA)
- Measurable progress on the process of establishment of a patent office in NIMR
- Submission of manuscripts for publication

2.5 RIND SERVICES:

Repairs, Servicing of Medical Equipment in NIMR.

RESEARCH PUBLICATIONS: Submission of manuscripts for publication

CAPACITY DEVELOPMENTS:

On-line training and capacity building in innovation techniques

COLLABORATIONS (INTERNATIONAL AND NATIONAL)

Collaborating with NOTAP in patenting and training.

GRANT/FELLOWSHIP AWARDS:

NIMR Grant Awards for RIND

CHALLENGES

- Non-uniformity/poor finishing of our hand-fabricated products with respect to size, width, and shape plus an inability to do mass production if the need arises.
- Cumbersome patenting and product registration with the relevant authority.
- No institutional policy that seeks to protect and back up a Researcher with innovation: financial benefit, co-ownership right, and duration.
- Deficiency of dedicated and fit for purpose permanent RIND Unit staff

- Inability to complete development of RIND Unit Policy document and SOP as a result of COVID-19 pandemic.
- Slow progress on the process of establishment of the patent office in NIMR
- Slow response from National TB and Leprosy Coordinators
- Lack of funding and dedicated laboratory space for innovative Researchers
- Misconception of the position of RIND Unit by the Researchers.
- Lack of conducive office space for RIND Unit personnel
- Increase efforts on funds applications and activation of collaborations with NIMR Research Foundation.
- Employment of dedicated fit for purpose permanent RIND Unit staff
- Development of institutional policy document on research and innovation.
- Buy in and co-operation of NIMR Researchers into activities of RIND Unit.
- Finalize scale-up talks with stakeholders.
- Engaging major DOT centers in strategic cities in Nigeria for implementation of NimCure program.
- Capacity Development in research and innovation techniques.
- Getting a dedicated laboratory for innovative Researchers.

WAY FORWARD

- Operational dynamics of R&D is a multifaceted affair that ranges from conceptualization, experimentation, actual product development to validation. What is expected to galvanize the flow of these processes is unlimited access to finance. There is therefore a need **to upgrade funds allocated to the RIND Unit annually**. This will afford RIND the opportunity to be more productive.

WORK PLAN FOR YEAR 2022

| OBJECTIVES | ACTIVITIES | INDICATORS | TIMELINE YEAR 2022 | | | | KEY RESPONSIBLE | BUDGET |
|---|--|---|---|--|---|---|-----------------|--------|
| | | | 1 st quarter | 2nd Quarter | 3 rd Quarter | 4 th Quarter | | |
| Strategic Objective 4.1.: strengthen Research, Innovation and product development (RIND) Unit. | | | | | | | | |
| 1. Identify gaps and provide solutions in medical diagnostics, drugs and vaccines research and development. | Gaps identified (yes) Solutions provided (yes) | RIND and Researchers interface to brain storm on potential innovative ideas | Review of submitted proposals | Identify possible sponsors/ Venture Capitalist | Meeting with Entrepreneurs | DG, RIND Director, HODs and Scientific Committee members | N2m | |
| 2. Provide grants to support innovation | Grant provided (no) channels created (yes) | Employment of permanent dedicated staff | Develop institutional policy on research and innovation | RIND capacity development | Printing and dissemination of RIND Policy document and SOPs | DG, Grant Office, RIND, Innovators & NIMR research foundation | N45m | |
| 3. Establish patenting office and create channels for research products commercialization. | Patenting office Established (yes/no) | Continuous inter face with NOTAB | RIND staff visitation of NOTAB Abuja office | Training of NIMR staff/ furnishing IPTTO NIMR office | Launching of NIMR IPTTO office | NOTAB Key staff, RIND, Researchers | N3m | |
| 4. Explore opportunities to interface with private sector /Federal Ministry of Science and Technology. | Number of opportunities created | Meetings With interested organisations | Meetings With interested companies | Product costing meetings | Product commercialization | Opolo, 54 Gene, FMoH, FMST etc. | N5m | |
| Total | | | | | | | N55m | |

| Objectives | Activities | Indicators | Timeline Year 2022 | | | | Key Responsible | Budget |
|------------|--|--|---|---|---|---------------------------------|--|---------------|
| | | | 1st Q | 2nd Q | 3rd Q | 4th Q | | |
| | Strategic Objective 4.1 Strengthen Research, Innovation and Product Development (RIND) Unit | | 1st Q | 2nd Q | 3rd Q | 4th Q | | |
| 1 | Identify gaps and provide solutions in medical diagnostics, drugs and vaccines research and development. | Gaps identified (yes) Solutions provided (yes) | RIND and Researchers interface to brain storm on potential innovative ideas | Review of draft proposals | Identify possible sponsors | Meeting with Entrepreneurs | DG, RIND Director, HODs and Scientific committee | N2m |
| 2 | Provide grants to support innovation. | Grant provided (no) channels created (yes) | Employment of permanent dedicated staff | Develop institutional policy on research and innovation | RIND capacity development | | DG, Grant Office, RIND, Innovator | N45m |
| 3 | Establish patent office and create channels for research products commercialization. | Established patent office (yes/no) | Continuous interface with NOTAB | RIND staff visitation of NOTAB Abuja office | Training NIMR staff/ establish IPTTO office in NIMR | Launching of NIMR IPTTO office | NOTAB Key staff, RIND, Researchers | 3m |
| 4 | Explore opportunities to interface with private sector /Federal Ministry of Science and Technology. | # of opportunities created | Meetings With interested organisations | Meetings With interested companies | | Opolo, 54 Gene, FMoH, FMST etc. | | N.5m |
| | | | | | | | Total | N50.5m |

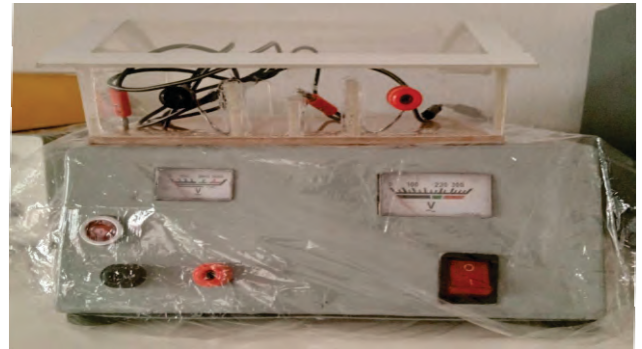
OUR FINISHED PRODUCTS ARE AS SHOWN BELOW



NIMR Biotech Biological Incubator and Oven



NIMR BIOTECH GENOTYPE MACHINES- MODEL I



NIMR BIOTECH GENOTYPE MACHINE MODEL II



DNA/RNA Extraction kits for Animals and Plant

WORKS AND MAINTENANCE DEPARTMENT

INTRODUCTION

Works and Maintenance Department comprises of Civil, Electrical/Electronics, Refrigeration and Air-Conditioning, Transport, Environmental and Biomedical Engineering Divisions. The Department provides support services on infrastructures such as building, electric power supply, plumbing, air-conditioning, transport & logistics, biomedical and environmental maintenance in the Institute.

These services under the schedules mentioned above entail the repairs of faulty air-conditioners/refrigerators, spoilt furniture, replacement of spoilt electrical fittings such as fluorescent tubes, LED light fittings, chokes, starters, electrical sockets, cables etc. The routine service cuts across all the building infrastructures in the Institute.

ACTIVITIES

The activities of each Division/Unit in the Department for the year 2021 are as given below:

1. BIOMEDICAL ENGINEERING UNIT

- Installation, maintenance, repair and servicing of the Institute's Research and Laboratory devices.
- Training of a National Youth Service Corps (NYSC) member, and 3 (three) Industrial Training/SIWES students.
- Inspection and verification of procured research and laboratory devices.

- Inspection of disposal of wastes and activities of LAWMA in the Institute's surroundings.
- Participation in Ad-hoc activities assigned by the Management.
- Studying how to install, calibrate, maintain, repair, and service advanced digital Research and Laboratory devices-Ongoing.
- Incineration of pathogenic research/laboratory waste materials.

2. CIVIL ENGINEERING DIVISION

Civil Engineering Division in Works & Maintenance Department deals with the maintenance services of NIMR infrastructural facilities like various buildings, furniture, drainage, sewerage, office/house-hold and medical wastes disposal systems, internal roads network and the environments.

The main activities include:

- Major renovation and maintenance works were carried out in Power House, Staff Clinic, Administrative and Auditorium buildings.
- Supervised the completion and handing over of the E- Library and Administration building to the Management.
- NIMR Incinerator was modernized and it can no longer emit harmful fumes nor pollute the air.

- The main Laboratory Complex was given total rehabilitation and furnishing.
- Due to insecurity in the country, NIMR Main Gate was provided with “turns-tiled” passage security facility.
- The 20-bed Researchers’ Health-Centre building was completed awaiting furnishing and commissioning.
- Proposed Covid-19 & Emergency Viral Diseases Research Laboratories building-ongoing.
- Proposed Bio-Repository building-ongoing.

3. **ELECTRICAL ENGINEERING DIVISION**

Electrical Division is in charge of power supply and all the electrical appliances of the Institute starting from the priority feeder line, transmission and the distribution line. Basically, it is the only Division that operates the Shift system in the Institute meaning the staff work round the clock to ensure uninterrupted power supply in the Institute.

The main activities include:

- Load Balancing on Transformers for power sustainability.
- Proactive, preventive, corrective and general services of the Institute’s plants in line with the manufacturers’ recommendations.
- Rectification of all electrical faults in the Institute’s laboratories including the equipment.
- Monitoring and supervision of the Institute’s priority feeder contractor in

the maintenance of the High Tension (H.T) line, High Tension circuit breakers, Transformers, and the ring main unit

- Maintenance and servicing of all the generators for continuous and optimal performance.
- Ensuring steady power supply to all offices, laboratories and residences.
- Reducing response and down times to fault rectification.
- Ensuring electrical load balancing in each phase etc.
- Constant monitoring of the Low-Tension lines to effect repairs.
- Replacement of all non-functional electric bulbs and sockets in the various laboratories.

4. **ENVIRONMENTAL AND SANITARY ENGINEERING DIVISION**

Environmental and Sanitary Engineering Division in W&M Department is concerned with keeping and maintaining both the inner and outer environments of NIMR clean and conducive.

The main activities include:

- Cleaning of Offices, various laboratories, inner road networks, sanitary and drainage facilities.
- Up-keeping and maintaining of flowers, grassy lawns and trimming of shrubs.
- Appropriate and safe methods of disposing each class of generated wastes was applied so that adverse effect might not be observed.

- Provision of neat and conducive environments needed for Research activities in the Institute.
- Provision of waste bins of various types helped a lot in improving the sanitation level and for making the wastes disposal very easy in NIMR premises.

5. REFRIGERATION & AIR-CONDITIONING UNIT

- Routine services of all the Air Conditioners in the Institute.
- Repairs of all the faulty Air Conditioners
- Installations of newly purchased Air-Conditioners.
- Repairs of faulty Fridges/Freezers
- Repairs of all faulty ultra-low Freezers.
- Attended to all coding system work orders issued to the Unit.

6. TRANSPORT UNIT

- All Institute's vehicles were serviced as at when due throughout 2021.
- Some vehicles with expired tyres had them replaced.
- The new vehicles were received and the papers processed
- All mobility logistics were attended to throughout the year

CAPACITY DEVELOPMENT

Hands-on training for all the Works and Maintenance staff (both Senior and Junior) of the Department.

Number of NYSC - 1

Number of Industrial Training Students – 3

CHALLENGES

- Lack of routine or planned maintenance system for effective services
- Inadequate number of maintenance staff
- Non availability of tools

WAY FORWARD

- More qualified maintenance staff needed
- Routine and planned maintenance system needed
- Manpower training/workshops required to meet up with the use of modern technologies.

2022 WORK PLAN

- Hands-on training for all the craftsmen and leadership training for Senior Staff of the Department.
- Attend to all work orders issued to the Department.
- Maintenance and servicing of all Institute's vehicles.
- Restore, improve or replace every infrastructural facility that will enhance enabling environment for basic, applied and operational research studies going on in the Institute.
- Cart away all the wastes generated by the Institute's solid, domestic and medical wastes twice in a week.

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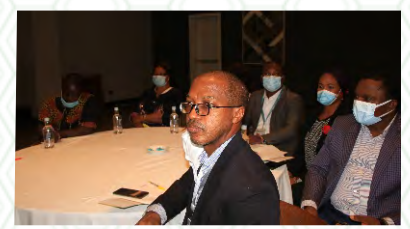
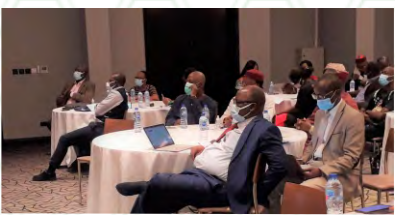
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