



AHMADU BELLO UNIVERSITY

**AFRICA CENTRE OF EXCELLENCE FOR
NEGLECTED TROPICAL DISEASES AND
FORENSIC BIOTECHNOLOGY**

PROJECT COMPLETION REPORT



ACENTDFB Project Completion Report

**Zaria, Nigeria
June 2025**

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NEGLECTED TROPICAL DISEASES AND
FORENSIC BIOTECHNOLOGY
(ACENTDFB)**

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ISBN:

Website: www.acentdfb.abu.edu.ng

Facebook: www.facebook.com/acentdfb/

Twitter: twitter.com/acentdfb

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Published and Printed by:

Ahmadu Bello University Press Limited, Zaria,
Kaduna State, Nigeria.

Tel.: 08065949711.

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Vice-Chancellor, Ahmadu Bello University, Zaria



Professor Yakubu K.E. Ibrahim
Center Leader/Director, ACENTDFB

FOREWORD

The Ahmadu Bello University, for over half a century, has been consistent in its commitment to the dynamism of global society through the design and implementation of teaching, learning, research and community service programmes. This is in line with the priorities of the founding fathers as declared by Sir Ahmadu Bello during the foundational stages of the institution:

"Ahmadu Bello University shall be a world-class university comparable to any other, engaged in imparting contemporary knowledge, using high quality facilities and multi-disciplinary approaches, to men and women of all races, as well as generating new ideas and intellectual practices relevant to the needs of its immediate community, Nigeria and the world at large."

Today, the institution, faithfully espousing the vision of its great founder and late Premier of Northern Nigeria, Sir, Ahmadu Bello, *Sardaunan Sokoto*, as a university of choice with world class infrastructure, academic and non-academic staff, research and related programmes. The Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) is one of the key research projects of the institution aimed at addressing those challenges that affect the health and well-being of the Nigerian population and other communities across the globe. With support from the World Bank and other organizations, the Centre within the past decade, worked through diverse research programmes on areas of neglected tropical diseases. Furthermore, it has also laid the foundation for the use of biotechnological tools to solving problems in forensics.

The lifespan of the Project is coming to an end. I congratulate the Centre and the wider University community for the successes attained. In order to sustain the progress made, the University will spare no efforts in supporting the Centre towards expanding its activities through internal and external funding. As is the culture with our great institution, the priority would be on ensuring and sustaining excellence in the current and future programmes of the Centre.

I have the pleasure of committing this report, which summarizes the work of ACENTDFB, to the wider world. It will serve as a reference point for those who may wish to further explore the work of the Centre and for collaborations with the Centre and other research and academic programmes of the University.

The Ahmadu Bello University, as ever, always welcome the world and open to collaborative explorations for human progress.

Professor Adamu Ahmed
Vice-Chancellor

LIST OF ACRONYMS

AAU	Association of African Universities
ABU	Ahmadu Bello University
ACE	Africa Centre of Excellence
ACENTDFB	Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology
ARISE-PP	African Research Initiative for Scientific Excellence-Pilot Program
BVGH	BIO Ventures for Global Health
CBRT	Centre for Biotechnology Research and Training
CCTV	Closed Circuit Television
CIRDES	Centre International e Recherche-Development sur l'Elevage en zone Subhumide
COVID-19	Corona Virus Disease-19
CT	Computed Tomography
DLI	Disbursement-Linked Indicators
DNA	Deoxyribonucleic acid
EDCTP	European & Developing Countries Clinical Trials Partnership
ELISA	Enzyme-linked immunosorbent assay
HCERES	High Council for the Evaluation of Research and Higher Education
IAEA	International Atomic Energy Agency
IBED-CETI	Insectarium Bobo Dioulasso – Campagne d'Eradication de la mouche Tse-tse et de la Trypanosomiase
IITA	International Institute for Tropical Agriculture
IRAD	Institute for Agricultural Research for Development
J-WEL	Jameel World Education Lab
KCCR	Kumasi Centre for Collaborative Research
LGA	Local Government Area
LFTS	Lateral Flow Test Strips
LSTMH	Liverpool School of Tropical Medicine and Hygiene
M & E	Monitoring and Evaluation
MIT	Massachusetts Institute of Technology
MRI	Magnetic Resolution Imaging

NAEC	Nigeria Atomic Energy Commission
NAMS&T	Centre for Science and Technology for Non-Aligned Movement and other Developing Countries
NCDC	Nigeria Centre for Disease Control
NEKKEN	Nagasaki University Institute of Tropical Medicine
NGO	Non-Governmental Organization
NIHR	National Institute for Health and Care Research
NIMR	National Institute for Medical Research
NITR	Nigerian Institute for Trypanosomiasis (and Onchocerciasis) Research
NTD	Neglected Tropical Diseases
NUC	National Universities Commission
PCR	Polymerase Chain Reaction
PGD	Postgraduate Diploma
PI	Principal Investigator
UKRI	UK Research and Innovation
UV/IR	Ultraviolet and infrared radiation
RNA	Ribonucleic acid
TETFund	Tertiary Education Trust Fund
WAAVP-AN	World Association for the Advancement of Veterinary Parasitology African Network
WB	World Bank
WAEC	West African Examinations Council
WIPO	World Intellectual Property Organization

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ACKNOWLEDGEMENTS

The success of the implementation of Africa Centres of Excellence (ACE) Project for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) was largely as a result of the dedication of a group of like-minded researchers and individuals and groups within and outside the University, committed to excellence in teaching, research and service to the immediate and wider community. The ACENTDFB was one of the four proposals submitted for funding by the Ahmadu Bello University in 2013. After the usual strictly merit-based selection process, ACENTDFB was one of the successful centres selected in Nigeria. It was headed by the late Professor Andrew Jonathan Nok.

We are ever profoundly grateful to Professor Nok who unfortunately passed on in 2017. His leadership in the design and establishment of the Centre ensured that it was among the only few selected Centre in Nigeria in 2014. Other members of the team that wrote the proposal and became the pioneer officers of ACENTDFB were Prof JKP Kwaga, Prof Y.K.E. Ibrahim, Prof Iliya S. Ndams, Prof. Hussaina J. Makun, Prof Mohammed Mamman, Prof Junaid Kabir, Prof. Hajia M. Inuwa, Prof. Nicodemus M. Useh and of course Prof Kelm Soerge of University of Bremen (who coined the name for the Centre). The Non Academic pioneer officers were Mr. Salisu Ibrahim, Mr. Nuhu Ishaya and Mr. Yakubu Anivbassa.

The leaderships of the Ahmadu Bello University over the years have been consistent in supporting not only the design of the Project, but also its implementation. Professor Abdullahi Mustapha, Professor Ibrahim Garba and Professor Kabir Bala were Vice-Chancellors of the Ahmadu Bello University between 2010 and 2025 at the critical times in the design and implementation of the Project. Prof Abdullahi Mustapha constituted a 4- member Committee headed by Prof Stephen Abah that coordinated the submissions of the proposals (4 in number) of the University to the National University Commission. Prof Ibrahim Garba and Prof Kabiru Bala guided, supported and provided enabling environment for the successful implementation of the activities of the Centre. We are indeed very grateful to them.

We also appreciate Professor Adamu Ahmed, the current Vice-Chancellor of the Ahmadu Bello University, who was one of the 4-

Members ACE Proposal Coordinating Committee set up in 2013 by Prof Abdullahi Mustapha and who upon taking over the mantle of leadership of our great institution recently, has continued to ensure the successful completion of the Project. He has also demonstrated his commitment to promoting the sustainability of the Centre so that the Centre will continue to play its role in teaching, research and community service.

Our gratitude also goes to the National Implementation Agency, the National Universities Commission for their consistent support and guidance, from the Executive Secretaries to the National Project Secretariat led by Dr. Joshua Atah who at all times provided guidance which enhanced our successes. Our appreciation also goes to the Association of African Universities (AAU) for steering this ACE Project, providing regular oversights and guidance, updates and implementing needed policies to drive the activities of the Centres. In the same vein, we thank the World Bank that apart from providing funding support, also had a team of experts that were consistently supporting our work.

The ACENTDFB Project implementation was made possible by a Team that was simply dedicated to excellence. The outcome of their work is there to be seen from the excellent impact that the Centre continues to make in the immediate and wider communities. This acknowledgement will not be complete without thanking and appreciating the Department of Biochemistry and the Centre for Biotechnology Research and Training (CBRT) – they were indeed the pivots of the Centre. Each and every member of the Team (researchers, administrative and finance officers from various departments and units of the University) are highly appreciated as well as others who have, in one way or the other, provided input in the implementation and success of the project. To our students, I say thank you all, for being part of the glorious journey.

Professor Yakubu K.E. Ibrahim
Center Leader/Director

INTRODUCTION

The development of any society is unavoidably linked to the health and well-being of the population. Productivity, economic growth and increased participation in education are enhanced through a healthy population. Similarly, a healthy population ensures that less resources are dedicated to addressing health challenges that might occur.

Nigeria, like a number of other nations of the Developing World, faces challenges of the health and well-being for its population. Key reasons being poor access to quality healthcare, poverty and other social factors. Compounding this is the prevalence of Neglected Tropical Diseases (NTD) in Nigeria. These pose risk to over 100 million Nigerians – about half of the population of the country. The consequence of the prevalence of NTD is that if the situation is not addressed, low productivity, poverty and poor health and living standards will continue to be on the rise.

The Africa Center of Excellence for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) was established with the aim of being in the forefront of addressing the challenge of NTDs in Nigeria and other parts of the Developing World. Working in collaboration with a number of national and international organizations, the Centre prioritizes the drive for Molecular Research and biotechnological innovations on:

- i. Novel standardized molecular diagnostic tools for the characterization of these viruses and parasites in their natural habitats which would be used to map the burden and distribution of the pathogens in the region.
- ii. Developing and maintaining pathogen samples and strain repositories.
- iii. Developing facility for innovative vaccination approaches on animals of economic relevance and many more

In recognition of the important work of the Centre, the World Bank, in 2013, selected it as one of the African Centres of Excellence, with activities taking off in 2014 under the leadership of the late Professor Andrew Jonathan Nok. Since then, the Centre has been noted for

progress made in addressing the challenges of NTD and Forensic Biotechnology. Its academic and research programmes continue to be avenue for generating and sharing information and ideas to promote the well-being of the population. Close collaboration with the immediate and wider communities ensures that the target groups for the priorities of the Centre are enjoying the benefits of its work.

As a result of the excellent performance of the Centre in the first stage of the World Bank support, this was further renewed by the Bank in 2019 to support the scaling up of the Centre's work. In addition to scaling up its research, academic, training and other social services activities, ACENTDFB has been consistent in fostering regional and international partnerships and scholarships. Of great importance and note is that the work of the Centre has prioritized the national and regional strategic agenda addressing challenges in the health and related sectors.

MISSION AND OBJECTIVES OF THE CENTRE

Mission

Providing a reliable template to addressing problems of NTDs and related issues and their impacts on the socio-economic and health of communities in concerned developing countries.

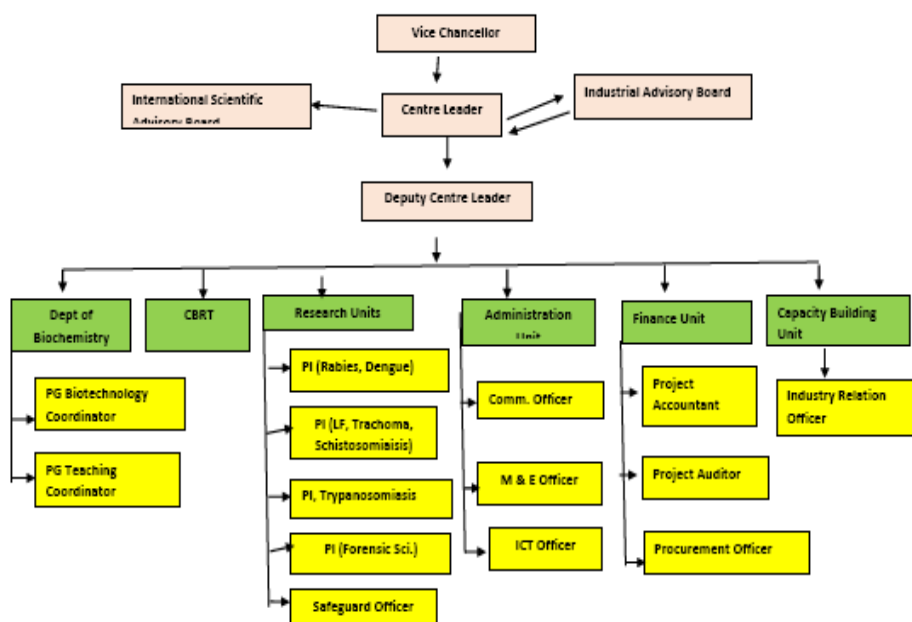
Objectives

- Development of graduate curriculum for and mounting of MSc and PhD Biotechnology programmes with exceptional bias to regional needs
- Provision of skilled manpower in diagnosis, management and prevention of neglected tropical diseases
- Provision of baseline data on the epidemiological status of neglected tropical diseases prevalent in the study region
- Development and production of vaccines for prevention of neglected tropical diseases
- Training of manpower in the general area of molecular biotechnology techniques and forensic science for solving related problems.
- Establishment of a facility and channel for the security agencies and society in resolving security, legal, paternity and other related issues

MANAGEMENT AND ORGANIZATIONAL STRUCTURE

The Centre is organized with the aim of ensuring efficient administration and implementation of its key objectives and priorities. It is divided into units in line with its functions with the Centre Leader at the helm of affairs who reports to the Vice-Chancellor of the parent University. Apart from the Management Team, there are also the Team of Researchers, International Scientific Advisory Board, International Advisory Board, Academic Committee, Procurement Committee and Audit Committee.

ORGANOGRAM OF THE CENTRE



Management Team

Prof. YKE Ibrahim
Centre Leader/Director



Prof. Mohammed Mamman
Deputy Centre Leader, PI, Trypanosomiasis



Prof. Junaidu Kabir
*Project Coordinator,
Industrial Liaison*



Prof Jacob K.P. Kwaga
*Principal Investigator,
Viral Zoonotic Diseases*



Prof. Iliya S. Ndams
*Principal Investigator, Filiariasis
Forensic*



Prof. Sani Ibrahim
Principal Investigator,



Prof. Balarabe M. Jahun
Director, CBRT, ABU



Prof. Hussaina J. Makun
Environmental Safeguard Officer



Prof. Salihu Aliyu
Head, Biochemistry and M & E Officer



Dr. Aminu Mohammed
Assistant M & E Officer



Dr. Murjanatu M. Abba
Communication Officer



Mr. Idris Abdulsalam
Administration Officer



Mr. Nuhu Ishaya
Procurement Officer



Mr. Ibrahim Salisu
Finance Officer



Mr. Muhammad A. Usman
Project Auditor



Mr. Ibrahim Babangida Sani
ICT Officer



Mr. Aminu Isa Musa
Laboratory Manager



Mr. Yazidu Ahmed
Assistant Finance Officer

Teaching/Supervisory Staff

S/N	Names/Qualifications	Position/Department
1	Prof Yakubu K.E. Ibrahim, B.Sc Pharm; MSc; (ABU), Dr. sc.hum. (Heidelberg)	Centre Leader/Director Pharmaceutical Microbiology
2	Prof. Mohammed Mamman, DVM; MSc; PhD (ABU)	Deputy Centre Leader Veterinary Pharmacology and Toxicology
3	Prof Junaid Kabir, DVM, MSc, PhD (ABU)	Project Coordination Veterinary Public Health and Preventive Medicine
4	Prof Jacob K.P. Kwaga, DVM, MSc. (ABU), PhD (Sask.), FCVSN, FAS	Principal Investigator, Viral Zoonotic Diseases, Veterinary Public Health and Preventive Medicine
5	Prof Iliya S. Ndams, BSc; MSc; PhD (ABU)	Principal Investigator, Lymphatic Filariasis/Trachoma/Schistosomiasis/Soil Transmitted Helminths. Zoology
6	Prof Sani Ibrahim BSc, MSc (ABU); PhD (Sussex)	Principal Investigator, Forensics Biochemistry
7	Prof Mohammed N. Shuaibu, BSc; MSc. (ABU); PhD (Nagasaki)	Biochemistry
8	Prof Abdullahi B. Sallau, BSc (UniMaid), MSc; PhD (ABU)	Biochemistry

9	Prof Hussaina J. Makun, DVM; MSc; PhD (ABU)	National Animal Production Research Institute
10	Prof. Aisha I. Mamman, MBBS (ABU), FWACP	ABUTH
11	Prof. Saad Ahmed, MBBS (ABU), FWACP	ABUTH
12	Prof. O. O. Okubanjo, DVM; MSc (ABU); PhD (Tokyo)	Veterinary Parasitology and Entomology
13	Prof Salihu Aliyu, BSc (ABU); MSc (Newcastle); PhD (IIUM)	Biochemistry
14	Prof Emmanuel O. Balogun, BSc; MSc (ABU); PhD (Tokyo)	Biochemistry
15	Prof Muawiya Abarshi Musa, BSc (UDUS); MSc; PhD (Greenwich)	Biochemistry
16	Prof Muhammad Auwal Ibrahim, BSc; MSc (ABU); PhD (UKZN), FNYA	Biochemistry
17	Prof. Maryam Aminu, BSc; MSc; PhD (ABU), FSAN	Microbiology
18	Prof. A. B. Suleiman, BSc; MSc, PhD (ABU), FNSM	Microbiology
19	Prof. M. B. Tijjani BSc; MSc, PhD (ABU)	Microbiology
20	Dr Muhammad Aliyu, BSc (UDUS); MSc.; PhD (Ibadan), FNYA	Biochemistry
21	Dr Aminu Mohammed, BSc; MSc (BUK); PhD (UKZN), FNYA	Biochemistry
22	Dr Uche Samuel Ndidi, BSc (NAU); MSc (ABU); PhD (FIOCRUZ)	Biochemistry
23	Dr Idowu A. Aimola, BSc.; MSc; PhD (ABU)	Biochemistry
24	Dr Grace N.S. Kia, DVM; MSc; PhD (ABU)	Veterinary Public Health and Preventive Medicine
25	Dr Gloria D. Chechet, BSc; MSc; PhD (ABU)	Biochemistry
26	Dr. Auwalu Garba, BSc (UDUS); MSc (India); PhD (ABU)	Biochemistry
27	Dr. Hafsat M. Abdullahi, BSc; MSc (BUK); PhD (ABU)	Biochemistry

28	Dr. Abdullahi A. Salman, BSc; MSc (ABU); PhD (UKZN)	Biochemistry
29	Dr. Auwal Adamu, BSc (ABU); MSc (Jordan); PhD (ABU)	Biochemistry
30	Dr. Helena Fodeke, BSc (ABU); MSc (Warwick); PhD (ABU)	Biochemistry
31	Dr. Babangida Sanusi, BSc; MSc; PhD (ABU)	Biochemistry
32	Prof H.M. Inuwa, BSc, MSc (ABU); PhD (Glasgow)	Biochemistry
33	Dr. Bassa Obed Yakubu, BSc; MSc; PhD (ABU)	Biochemistry
34	Dr. Sanusi Babangida, BSc; MSc; PhD (ABU)	Biochemistry
35	Dr. Hauwa Salisu Usman, BSc; MSc; PhD (ABU)	Biochemistry
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38	Prof. A. Sule, BA; MA; PhD (ABU)	Archeology
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47	Prof. Kelm Soerge	Centre for Biomolecular Interaction, University of Bremen, Germany

Non-Teaching Staff

S/N	Names/Qualifications	Position
1	Dr Murjanatu M. Abba, BSc (BUK); MSc (ABU); PhD (BUK)	Communications Officer
2	Mr. Idris Abdulsalam, BSc (BUK), MPA (ABU)	Administration Officer
3	Mr. Nuhu, Ishaya, BSc; MSc (ABU); CPA; CNA, NIM	Procurement Officer
4	Mr. Ibrahim Salisu, BSc (ABU); MAC, CFA, CNA	Finance Officer
5	Mr Muhammad A. Usman, BSc; MBA (ABU); CPA, CNA	Project Auditor
6	Mr. Ibrahim Babangida Sani, BSc; MIM (ABU)	ICT Officer,
7	Mr. Yazid Ahmed, ND, HND (AGPTM), B.Sc (ABU)	Asst Finance Officer
8	Mr. Aminu Isa Musa, BSc (BUK), MSc (India)	Asst Lab Manager
9	Mr. Gimba Auta Mark	Store officer
10	Mr. Silas Yashim	Secretary

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7	Prof Oyewale Tomori oyewaletomori@gmail.com	Professor of Virology, and Former President, Nigerian Academy of Science

Industrial Advisory Board

S/N	Names/Qualifications	Department/Address
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5	Dr. Usman Ibrahim Gebi, gebiui1@gmail.com ; +2348033144629	Director, Friends for Global Health Initiative in Nigeria, affiliate of Vanderbilt University, USA
6	Mr Manason Rubainu r_manason@yahoo.com	Peak Medical Laboratories, Ltd., Gwagwalada, FCT, Abuja

Procurement Committee

S/N	Names/Qualifications	Position
1	Prof Yakubu K.E. Ibrahim, B.Sc Pharm (ABU); MSc; (ABU), Dr. Sc.hum. (Heidelberg)	Centre Leader/Director
2	Prof. Mohammed Mamman, DVM (ABU); MSc; PhD	Deputy Centre Leader & Principal Investigator, Trypanosomiasis
3	Prof Junaid Kabir, DVM (ABU), MSc (ABU), PhD (ABU)	Project Coordinator Industrial Liaison Officer
4	Prof Jacob K.P. kwaga, DVM (ABU), MSc. (ABU), PhD (Saskatchewan), FCVSN, FAS	Principal Investigator, Rabies & Dengue fever
5	Prof Illiya S. Ndams, BSc. (ABU); MSc (ABU); PhD (ABU)	Principal Investigator, Lymphatic Filariasis/Schistosomiasis/Trachoma/STH
6	Prof Sani Ibrahim BSc. (ABU), MSc (ABU); PhD (UK)	Principal Investigator, Forensics

7	Prof Salihu Aliyu, BSc (ABU); MSc (Newcastle); PhD (IIUM)	Head of Department of Biochemistry & Monitoring and Evaluation Officer
8	Prof Hussaina Makun, DVM, MSc ; PhD (ABU)	Environmental and Safeguard Officer
9	Mr. Nuhu, Ishaya, BSc; MSc; CPA; CNA; NIM	Procurement Officer
10	Mr. Ibrahim Salisu, BSc; MAC; CFA; CNA	Finance Officer
11	Mr Muhammad A. Usman, BSc; MBA; CPA; CNA	Project Auditor

Academic Committee

S/N	Names/Qualifications	Position
1	Prof Yakubu K.E. Ibrahim, B.Sc. Pharm (ABU); MSc; (ABU), Dr. sc.hum. (Heidelberg)	Centre Leader/Director
2	Prof. Mohammed Mamman, DVM; MSc; PhD (ABU)	Deputy Centre Leader & Principal Investigator, Trypanosomiasis
3	Prof Junaid Kabir, DVM, MSc, PhD (ABU)	Project Coordinator Industrial Liaison Officer
4	Prof Jacob K.P. Kwaga, DVM, MSc (ABU), PhD (Saskatchewan), FCVSN, FAS	Principal Investigator, Rabies & Dengue fever
5	Prof Iliya S. Ndams, BSc.; MSc; PhD (ABU)	Principal Investigator, Lymphatic Filariasis/Schistosomiasis/Trachoma/STH
6	Prof Sani Ibrahim BSc, MSc (ABU); PhD (UK)	Principal Investigator, Forensics
7	Prof Salihu Aliyu, BSc (ABU); MSc (Newcastle); PhD (IIUM)	Head of Department of Biochemistry & Monitoring and Evaluation Officer
8	Dr Uche Samuel Ndidi, BSc (NAU); MSc (ABU); PhD (FIOCRUZ)	Student Industrial Liaison Officer
9	Dr Helena Fodeke, BSc (ABU); MSc (Warwick); PhD (ABU)	PG Teaching Coordinator

Audit Committee

S/N	Names/Qualifications	Position
1	Prof Muhammad Kawu, DVM, MSc; PhD (ABU); Former ABU Council Member	Chairman
2.	Prof Donatus Adie B.Eng., MSc, PhD (ABU)	Member
3	Prof Abdullahi Y. Idris BSc, MSc., PhD (ABU)	Member
4	Maiyaki Hamisu Musa HND, MBA (ABU), ACA, CNA	Member
5	Mr. Nuhu Onimisi Aliu BSc., MSc. (ABU), NIM, CNA	Member

KEY DEPARTMENTS OF THE UNIVERSITY INVOLVED IN THE CENTRE

The Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology is administratively housed at the Centre for Biotechnology Research and Training (CBRT) while the degree programmes are domiciled in the Department of Biochemistry. The research facilities of the Centre are located in the CBRT, Department of Biochemistry, Department of Zoology and the Department of Veterinary Public Health and Preventive Medicine, among others.

S/N	Department/Unit	DESCRIPTION OF ROLE/AREAS OF ACTIVITY
1	Department of Biochemistry	Hosts and administers the Postgraduate Degrees of the Centre (MSc and PhD Biotechnology, MSc and Masters Forensic Science, and PGD Forensic Biotechnology). It also hosts some of the laboratory facilities of the Centre
2	Centre for Biotechnology Research and Training (CBRT)	Hosts most of the research facilities of the Centre
3	Department of Zoology	Hosts some of the research facilities of the Centre. It also provides some of the staff for teaching, research supervision and lab support
4	Department of Veterinary Public Health and Preventive Medicine	Provides some of the teaching and supervision staff. It will host the proposed MSc (One Health) programme.
5	Department of Pharmaceutical Microbiology	provides some of the staff for teaching, research supervision and lab support
6	Department of Archaeology	provides some of the staff for teaching, research supervision and lab support
7	Department of Civil Law	provides some of the staff for teaching, research supervision and lab support
8	Department of Veterinary Pharmacology and Toxicology	provides some of the staff for teaching, research supervision and lab support
9	Department of Veterinary Parasitology and Entomology	provides some of the staff for teaching, research supervision and lab support
10	Human Pathology	provides some of the staff for teaching, research supervision and lab support

RESEARCH PROGRAMMES

THEMATIC AREA 1: Viral Diseases (Dengue and Rabies)

Team Leader 	Professor Jacob Kwada Paghi Kwaga, FCVSN, FAS Department: Veterinary Public Health & Preventive Medicine jkpkwaga@abu.edu.ng , jkpkwaga@gmail.com , jacobkwaga@yahoo.com
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DESCRIPTION OF THEMATIC AREA

Two significant neglected viral diseases with high morbidity and mortality in Nigeria, namely rabies and dengue were selected. Rabies is endemic in Nigeria, but despite previous efforts an estimated 10,000 cases are reported to occur in the country annually, one of the highest rates globally. Dengue is emerging and appears to be prevalent in the country, but there has been dearth of information on its rate of occurrence. Thus, there is need to carry out surveillance of occurrence of the virus in mosquito vectors and humans.

THEMATIC AREA 2: Lymphatic Filariasis/ Onchocerciasis/ Schistosomiasis/ Soil Transmitted Helminths (STHs) / Trachoma

Team Leader 	Prof. Iliya Shehu Ndams B.Sc., M.Sc., Ph D. isndams@abu.edu.ng, indams@gmail.com
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DESCRIPTION OF THEMATIC AREA

The major focus of research by the group includes but not limited to the following:

Application and standardization of environmental DNA (eDNA) surveillance tools for xenomonitoring of *Schistosoma* species. The major focus of research by the group includes but not limited to the following:

- i) Application and standardization of environmental DNA (eDNA) surveillance tools for xenomonitoring of *Schistosoma* species and snails' intermediate hosts
- ii) Female genital schistosomiasis (FGS), Male genital schistosomiasis (MGS) and cancer
- iii) Drug resistance in filarial (*Wuchereria bancrofti*, *Onchocerca volvulus*, *Onchocerca Ochangii*), *Schistosoma haematobium*, *Schistosoma bovis*, Soil Transmitted Helminths (STHs) and *Chlymadia trachomatis*
- iv) Mechanisms of insecticide/pesticide resistance in vectors/intermediate hosts of NTDs pathogens
- v) Filarial Co-infections with other pathogens
- vi) Bioprospection of control agents against NTD infectious pathogens
- vii) Surveillance, epidemiological and control studies of filarial and related zoonotic pathogens
- viii) Endosymbionts-vector -pathogens interrelationships

THEMATIC AREA 3: Trypanosomiasis

Team Leader 	Prof. Mohammed Mamman, D.V.M., M.Sc., Ph.D., mammanm@hotmail.com; mmamman@abu.edu.ng
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DESCRIPTION OF THEMATIC AREA

The major focus of research by the group includes but not limited to the following:

- i. Gene and protein expression studies
- ii. Molecular characterisation of trypanosome species
- iii. Molecular characterisation of endosymbionts in *Glossina* species
- iv. Molecular detection of tsetse endosymbionts
- v. Epidemiology of trypanosomiasis
- vi. Enhancing fly refractoriness to trypanosome infection
- vii. Studies on key parasite genes for development of candidate naked DNA vaccine
- viii. Establishment of a system for production of trypanosomal enzymes and development of their inhibitors for drug design
- ix. Developing new treatments for animal and human trypanosomiasis, including exploring combinations of existing drugs, repurposing approved medications, and developing entirely new drugs and investigating the mechanisms of drug resistance and strategies to overcome them
- x. Use of mathematical models to analyze epidemiological parameters and identify factors that influence the emergence and spread of trypanosomiasis
- xi. Development and improving vector control methods, such as new insecticide-treated nets and other technologies to reduce tsetse fly populations and prevent transmission of trypanosomes

Studies on molecular interactions between trypanosomes and tsetse flies, including the role of tsetse fly endosymbionts and their impact on parasite transmission and development.

THEMATIC AREA 4: Forensics

Principal Investigator 	Prof. Sani Ibrahim BSc, MSc (ABU), PhD (Sussex) msanibrahim@gmail.com
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DESCRIPTION OF THEMATIC AREA

This thematic area focuses on advancing the application of forensic science in the investigation and resolution of criminal and civil cases in Nigeria and the region. Key research interests include:

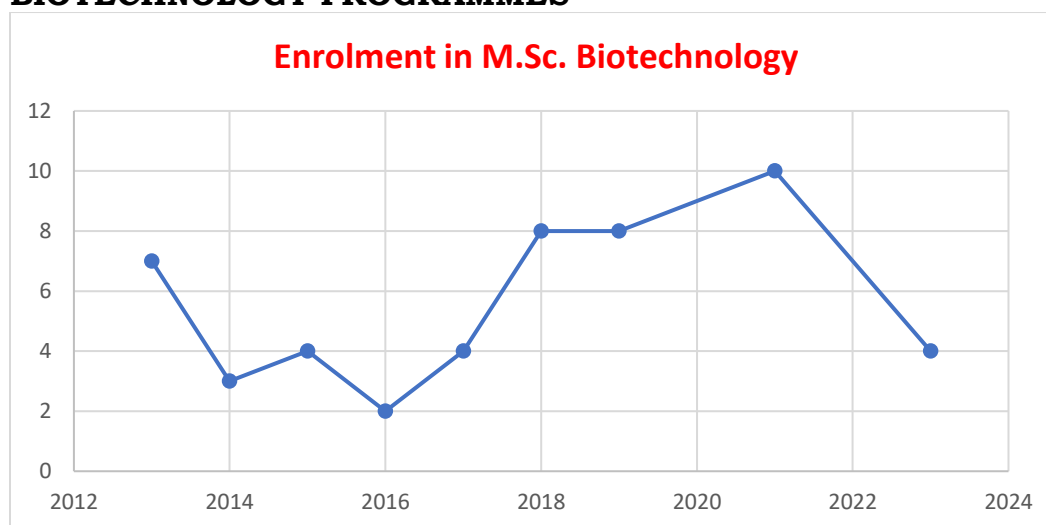
- i. Development and validation of modern forensic DNA analysis techniques for human identification and kinship testing.
- ii. Application of forensic entomology and botany in post-mortem interval estimation.
- iii. Use of forensic chemistry and toxicology to detect and quantify drugs, poisons, and other chemical substances in biological samples
- iv. Forensic document examination and handwriting analysis
- v. Digital forensics, focusing on retrieval and analysis of electronic data for use in legal proceedings
- vi. Capacity building in forensic science through training and collaboration with law enforcement agencies
- vii. Development of standards and best practices for forensic laboratories in line with international guidelines

ACADEMIC PROGRAMMES

The Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology is administratively housed at the Centre for Biotechnology Research and Training (CBRT) while the degree programmes are domiciled in the Department of Biochemistry. The research facilities of the Centre are located in the CBRT, Department of Biochemistry, Department of Zoology and the Department of Veterinary Public Health and Preventive Medicine, among others. The postgraduate degree programmes (MSc and PhD Biotechnology and PGD Forensic Biotechnology) were approved at the 463rd Meeting of the Senate of Ahmadu Bello University on 24th April 2014.

ACENTDFB is the only institution in the West African region that runs postgraduate degree programme in biotechnology targeting neglected tropical diseases that currently number 20 according to the World Health Organisation. The Centre currently runs the following Postgraduate Degree programmes:

1. MSc IN BIOTECHNOLOGY LIST OF CANDIDATES ADMITTED INTO THE M.Sc. BIOTECHNOLOGY PROGRAMMES



2013

S/No	Reg. No.	Surname	Other names	Sex
1	P13SCBC8052	YUSUF	Blessing Becky	Female
2	P13SCBC8026	IDOWU	Friday Molabo	Male
3	P13SCBC8007	DONGBA	Hassan Gimba	Male
4	P13SCBC8111	BABA ALI	ABDULMUTALIB	Male
5	P13SCBC8115	URAWUIKE	Samuel C.	Male
6	P13SCBC8113	NWACHUKWU	Christian	Male
7	P13SCBC8060	BAHAGO	Samuel	Male
8	P13SCBC8034	DANBAKI	Sam Ahmadu	Male
9	P13SCBC8028	SULEIMAN	Muntar Adeiza	Male
10	P13SCBC8036	SHEHU	Nura Ibrahim	Male
11	P13SCBC8114	ANTHONY	Chinedu David	Male
12	P13SCBC8112	OMOGOYE	Femi	Male
13	P13SCBC8116	YAKUBU	Aliyu	Male
14	P13SCBC8120	ADAJI	Joseph Otafo	Male
15	P13SCBC8012	IDOWU	Stephen Kolawole	Male
16	P13SCBC8023	GAIYA	Daniel Danladi	Male
17	P13SCBC8022	VER	Jeff Sai	Male
18	P13SCBC8045	AUDU	Elizabeth Funmilola	Female
19	P13SCBC8002	ABRAHAM	Sheyin	Male
20	P13SCBC8018	JOHN	Benjamin	Male
21	P13SCBC8039	ASHADE	Noah Oluwasegun	Male
22	P13SCBC8117	ATOBILOYE	Murtala Ahmed	Male

2014

S/No	Reg. No.	Surname	Other names	Sex
1	P14SCBC8020	TIMOTHY	ROSE	Female
2	P14SCBC8041	KORIE	GEORGE	Male
3	P14SCBSC8043	STEPHEN	AROME	Male
4	P14SCBC8045	MBAMBAM	FALIYA	Female
5	P14SCBC8046	AWODABON	HANNEDA	Male
6	P14SCBC8047	CHUKWU	ADAUGO	Female
7	P14SCBC8048	KANU	BRENDA	Female
8	P14SCBC8049	OJO	RAPHAEL	Male
9	P14SCBC8050	WILSON	YUSUF	Male
10	P14SCBC8112	OKPOKO	CHELUCHI	Female
11	P14SCBC8116	LEMA	ABDULLAHI	Male
12	P14SCBC8118	OJOCHIDE	HAUWA	Female

2015

S/No	Reg. No.	Surname	Other names	Sex
1	P15SCBC8037	OJEDAPO	COMFORT EBUNOLUWA	Female
2	P15SCBC8072	ALPHONSE	MENDY (Gambia)	Male
3	P15SCBC8069	SANKUNG	SANNEH (Gambia)	Male
4	P15SCBC8070	Alpha	Kargbo (Gambia)	Male
5	P15SCBC8032	ENTONU	MOSES EDACHE	Male
6	P15SCBC8034	HARUNA	KHADIJAH HARUNA	Female
7	P15SCBC8036	KASHIM	AISHAT SHOLA	Female
8	P15SCBC8038	ABUBAKAR	SADIQ ABUBAKAR	Male
9	P15SCBC8033	ABDULAZEEZ	MARYAM	Female
10	P14SCBC8130	YAHAYA	YUSUF	Male
11	P15SCBC8040	JOSEPH	YAHAYA	Male
12	P15SCBC8039	UDU	Stella KUYET	Female

2016

S/No	Reg. No.	Surname	Other names	Sex
1	P16LSBC8019	ADEJATO	KAZEEM O.	Male
2	P16LSBC8015	OGUNTUASE	OLUWAFEYISAYO	Male
3	P16LSBC8012	OGBU	LOVINA CHINYERE	Female
4	P16LSBC8013	MUSA	MUHAMMAD SHAIBU	Male
5	P16LSBC8016	YADIMA	ADAITI GAIUSON	Male
6	P16LSBC8020	UGWU	ANAYOCHUKWU	Male
7	P16LSBC8017	AGEE	JERRY TERSON	Male
8	P16LSBC8051	DIBBA	LAMIN B.S. (Gambia)	Male
9	P16LSBC8014	SAEED	SULEIMAN	Male
10	P16LSBC8018	ILU	AMEH	Male

2017

S/No	Reg. No.	Surname	Other names	Sex
1	P17LSBC8016	YAHAYA	ALIYU	Male
2	P17LSBC8018	KAJOGBOLA	AISHAT TOSIN	Female
3	P17LSBC8015	ISSA	FUNSHO HABEEB	Male
4	P17LSBC8017	EZE	GODSON OFOBUIKE	Male
5	P17LSBC8020	DAVID	YILA LAKABRA	Male
6	P17LSBC8028	AMEH	AGI BENSON	Male

2018

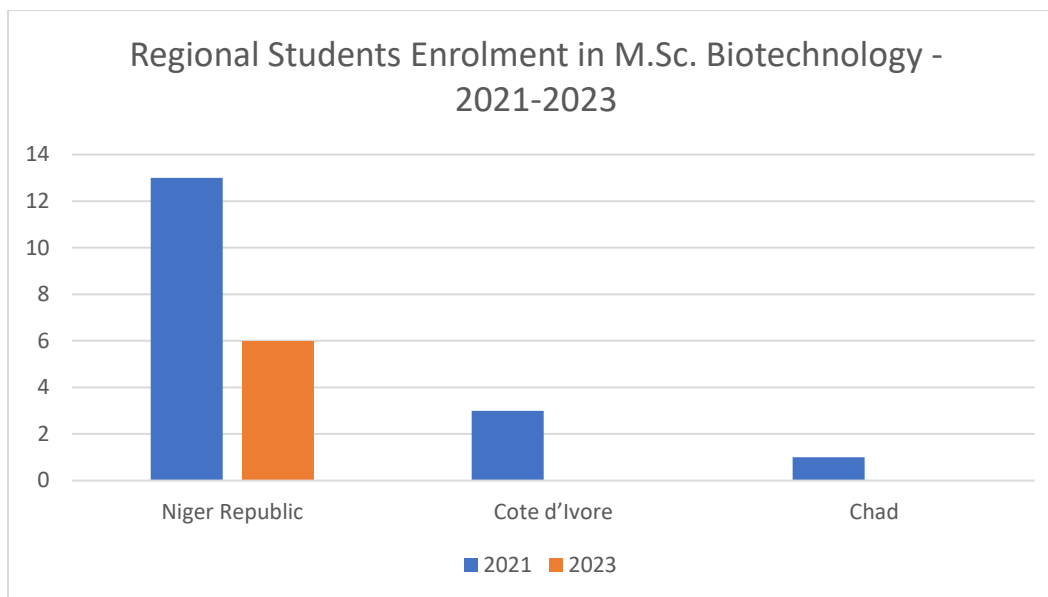
S/n	Name	Registration number	Sex
1	Tizhe Daniel Thakuma	P18LSBC8015	Male
2	Ojonugwa Precious John	P18LSBC8016	Female
3	Cleopas Isaac Lawnar	P18LSBC8022	Male
4	Abdulazeez Muhammad Abdul	P18LSBC8037	Male
5	Dashe Dentsen Fortune	P18LSBC8044	Male
6	Omolade Yemisi Adekeye-Biala	P18LSBC8052	Male
7	Asher Paul James	P18LSBC8053	Male
8	Zubair Halima Sadiya	P18LSBC8056	Female
9	Gideon Joseph Ibrahim	P18LSBC8060	Male
10	Lawal Munirah Kera	P18LSBC8066	Female
11	Dangabar Apollos Shadrack	P18LSBC8067	Male
12	Ahmad Yahaya	P18LSBC8068	Male
13	Umar Saidu	P18LSBC8070	Male
14	Mukhtar Aliyu	P18LSBC8071	Male
15	Gaelle Majindab Nji (Cameroon)	P18LSBC8079	Female
16	Atoh Cedric Munu Tamuton (Cameroon)	P18LSBC8080	Male
17	Mbanwei Marceline Temben (Cameroon)	P18LSBC8081	Female

2019

S/n	Name	Registration number	Sex
1	Samuel Olabode Charles	P19LSBC8011	Male
2	Rabiu Sayyadi Aliyu	P19LSBC8012	Male
3	Yakubu Hannatu	P19LSBC8015	Male
4	Stephen Zugumnan Emmanuel	P19LSBC8016	Male
5	Obadiah Timothy Tinat	P19LSBC8018	Male
6	Ukande Agatha Seember	P19LSBC8020	Female
7	Zubairu Ibrahim Waziri	P19LSBC8033	Male
8	Abubakar Musa	P19LSBC8034	Male
9	Iheanyi Goerge Chukwuemeka	P19LSBC8035	Male
10	Luka Caleb	P19LSBC8036	Male
11	Bibinu Unity Jojo	P19LSBC8040	Male
12	Jamiu Najimudeen Muhammad	P19LSBC8042	Male
13	Abdullahi Saminu	P19LSBC8049	Male

2021

S/N	NAME	REGISTRATION NUMBER	Sex
1	Hauwa'u Muhammad	P21LSBC8014	Female
2	Umar Isa	P21LSBC8057	Male
3	Mohammed Audu	P21LSBC8053	Male
4	Joel Ganih Saidu	P21LSBC8009	Male
5	Sani Khalid	P21LSBC8042	Male
6	Fatima Abdul Suleiman	P21LSBC8050	Female
7	Abdulrahman Ahmed Isah	P21LSBC8003	Male
8	Azimat Abdulwahab	P21LSBC8046	Female
9	Maicibi Joseph Latimo	P21LSBC8023	Male
10	Sani Ubaidat Adenike	P21LSBC8030	Female
11	Bashir Muhammad Gabdo	P21LSBC8015	Male
12	Abbati Muhammad Mahdi	P21LSBC8056	Male
13	Ibrahim Sofiyullahi	P21LSBC8004	Male
14	Muhammad Awwal Abdullahi	P21LSBC8019	Male
15	Abubakar Musa Yalwa	P21LSBC8022	Male
16	Sani Abdulateef Adebayo	P21LSBC8032	Male
17	Musa Fatimah Abba	P21LSBC8017	Female
18	Abdulkadir Naziru Dayaso	P21LSBC8028	Male
19	Abdulsalam Firdausi Umami	P21LSBC8013	Female
20	Abubakar Sani	P21LSBC8016	Male
21	Yakubu Ahmad Rufai	P21LSBC8049	Male
22	Adamu Garba	P21LSBC8051	Male
23	Mark John Ochigbo	P21LSBC8045	Male
24	Kenneth Elaigwu Itodo	P21LSBC8054	Male

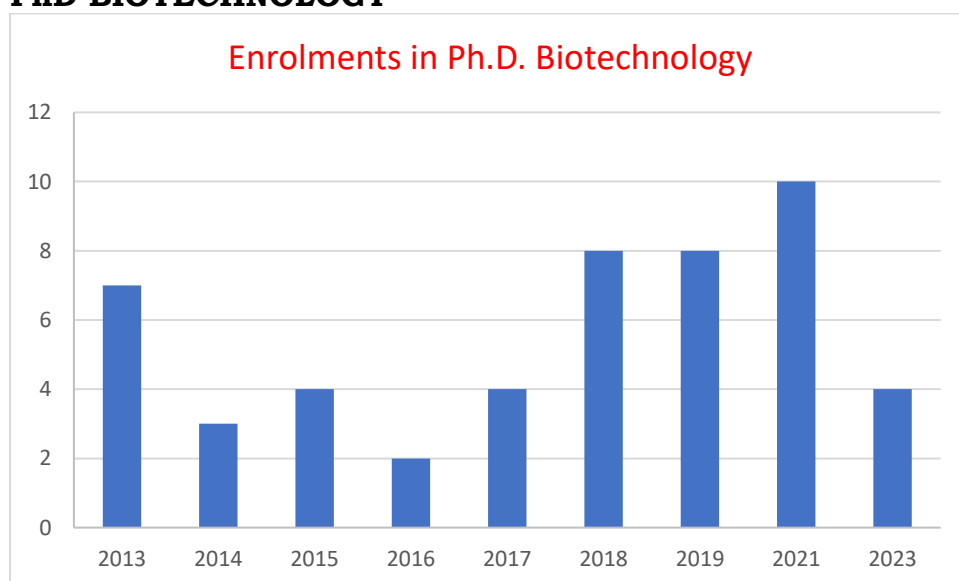


2021 Regional Students M.Sc. Biotechnology

S/No.	SURNAME	NAME	GENDER	LEVEL	Country
1	Abdoul Aziz	Moussa Saidou	Male	MSc	Niger Rep.
2	Amadou Harouna	Daouda	Male	MSc	Niger Rep.
3	Abdou Amidou	Ibrahim	Male	MSc	Niger Rep.
4	Seyni Hamani	Nassirou	Male	MSc	Niger Rep.
5	Nayou Labo	Massaoudou	Male	MSc	Niger Rep.
6	Mallam Sani Mallam	Hamidou Zouladeini	Male	MSc	Niger Rep.
7	Joume Mati	Sabiou	Male	MSc	Niger Rep.
8	Abdou Balla	Mahamane Kabirou	Male	MSc	Niger Rep.
9	Daouda Ousseini	Absatou	Female	MSc	Niger Rep.
10	Falalou Oumarou	Bounia Mounou	Male	MSc	Niger Rep.
11	Ila Amadou	Laouali	Male	MSc	Niger Rep.
12	Hama Djibo	Roukayatou	Female	MSc	Niger Rep.
13	Ouattara Pondo	Vincent	Male	MSc	Cote d'Ivoire
14	Hamien Gbale	Jean Bernard	Male	MSc	Cote d'Ivoire
15	Ablegue Charles	Emmanuel	Male	MSc	Cote d'Ivoire
16	Adoum	Malloum	Male	MSc	Chad

2023/24 MSc. Biotechnology

S/No.	Name	Reg. No.	Sex
1	Karma Joy Bawa	P23LSBC8001	Female
2	Zainab Abdulkarim Garba	P23LSBC8006	Female
3	Zainab Abdulazeez	P23LSBC8013	Female
4	Mati Mohamed Issa	P23LSBC8014	Male
5	Haladou Adamou Oumarou Farouk (Niger Republic)	P23LSBC8015	Male
6	HALIMA AMINU	P23LSBC8017	Female
7	Adam Kaou Malam Abari Malam Moustapha (Niger Republic)	P23LSBC8019	Male
8	Sani Bachir Amadou (Niger Republic)	P23LSBC8022	Male
9	Abubakar Ibrahim Usman	P23LSBC8025	Male
10	Ali Rakiya Ojochide	P23LSBC8026	Female
11	Zainab Luka	P23LSBC8030	Female
12	Sil-Ana Salissou Abdou (Niger Republic)	P23LSBC8032	Male
13	Fatima Bashir Ahmad	P23LSBC8035	Female
14	Hisham Muktar	P23LSBC8036	Male
15	Abuh Peter Ojonugwa	P23LSBC8039	Male
16	Yusuf Abubakar	P23LSBC8041	Male
17	MADA peter Joseph	P23LSBC8045	Male
18	Salahuddeen Ilyasu Gital	P23LSBC8047	Male
19	Moussa Maman Kabirou Malam Mani (Niger Republic)	P23LSBC8048	Male
20	Tamaraubrhakaemi Benita Brisibe	P23LSBC8051	Male
21	SUNDAY HALILU ROCAS	P23SLBC8050	Male
22	Sahailou Souley (Niger Republic)	P23LSBC8033	Male

PhD BIOTECHNOLOGY

LIST OF CANDIDATES ADMITTED INTO THE Ph.D. BITECHNOLOGY PROGRAMMES

2013

S/No	Reg. No.	Surname	Other names	Sex
1	P13SCBC9017	NJOKU	Godwin Chiaka	Male
2	P13SCBC9019	GEORGE	Eleanor	Female
3	P13SCBC9001	YUSUF	Aminu Bashir	Male
4	P13SCBC9018	GOUEGNI	Edwige Flore (Cameroon)	Female
5	P13SCBC9004	HABILA	Amaya Jobin	Female
6	P13SCBC9049	KOGI	Cecilia Asabe	Female
7	P13SCBC9045	GWANI,	Helena Enoch	Female

2014

S/No	Reg. No.	Surname	Other names	Sex
1	P14SCBC9003	ANDONGMA	BINDA	Male
2	P14SCBC9002	CHINTEM	WILLIAMS	Male
3	P14SCBC9022	ZAKAMA	SHOLY	Male

2015

S/No	Reg. No.	Surname	Other names	Sex
1	P15SCBC9009	ADAMU	OCHOLI JONATHAN	Male
2	P15SCBC9013	BELLO	Elizabeth Ohunene	Female
3	P15SCBC9015	SANI	Maryam Lawal	Female
4	P15SCBC9014	ABDULLAHI	Raihana Idris	Female

2016

S/No	Reg. No.	Surname	Other names	Sex
1	P16LSBC9001	Mohammed	AL-KASIM	Male
2	P16LSBC9002	HAYATU	SAADATU J	Female

2017

S/No	Reg. No.	Surname	Other names	Sex
1	P17LSBC9010	AMEDU	JOSEPHINE EJILE	Female
2	P17LSBC9013	KOLAWOLE	OLADIMEJI OLATAYO	Male
3	P17LSBC9015	LUKA	YELWA BARDE	Male
4	P17LSBC9014	ALIYU	YAHAYA	Male

2018-2019 Academic Session

S/N	Name	Registration number	Sex
Ph.D. BIOTECHNOLOGY			
1	Alhafiz Zainab Aliyu	P18LSBC9002	Female
2	Jibril Aisha Salihu	P18LSBC9005	Female
3	Sadiq Idris Zubairu	P18LSBC9010	Male
4	Youssouf Mfopit Mouliom (Cameroon)	P18LSBC9005	Male
5	Mahbou Peter Yunenui (Cameroon)	P18LSBC9012	Male
6	Alkasim Umar Farouq	P18LSBC9004	Male
7	Suleiman Adeiza Mukhtar	P18LSBC9009	Male
8	Tinuoye Olushola Oyewande	P18LSBC9011	Female

2019-2020 Academic Session

S/N	Name	Registration number	Sex
Ph.D. BIOTECHNOLOGY			
1	YUSUF Abdulhamid	P19LSBC9016	Male
2	HAMZA Sumayya Maishanu	P19LSBC9017	Female
3	ADAJI Joseph Otafu	P19LSBC9015	Male
4	ABBA Saadatu Yusuf	P19LSBC9006	Female
5	USMAN Batagarawa Salisu	P19LSBC9005	Male
6	BASIRU Ibraheem Dende	P19LSBC9001	Male
7	ENENYA Rufus Precious	P19LSBC9003	Male
8	NSADZETSEN Gilbert Adzemye (Cameroon)	P19LSBC9011	Male

2021-2022 Academic Session

S/N	Name	Registration number	Sex
Ph.D. BIOTECHNOLOGY			
1	Inim Mayen David	P21LSBC9007	Female
2	Abdullahi Aminu	P21LSBC9009	Male
3	Isah Aminu Musa	P21LSBC9011	Male
4	Chiwar Hassan Musa	P21LSBC9013	Male
5	Alfa Unekwuajo David	P21LSBC9010	Male
6	Awodabon Fomukong Hanneda (Cameroon)	P21LSBC9012	Male
7	Abdullahi Bilkisu	P21LSBC9017	Female
8	Kolo Baba Shehu	P21LSBC9016	Male
9	Saleh Ishaka	P21LSBC9015	Male
10	Dahiru Naziru	P21LSBC9014	Male

Ph.D. Biotechnology (Regional)

S/No.	SURNAME	NAME	GENDER	Country
1	Mahamadou Rabiou	Moudi Aboubacar	Male	(Niger Republic)
2	Dan Boula Kindim	Maman Raoui	Male	(Niger Republic)
3	Ousmane Hassane	Hassane	Male	(Niger Republic)
4	Abdourahaman Djibo	Tassiou	Male	(Niger Republic)
5	Ibrahim	Moutari	Male	(Niger Republic)
6	Hamadou Hima	Nourou	Male	(Niger Republic)
7	Kouame Cindy	Cathland	Female	Cote d'Ivoire
8	Coulibaly Kpanhonri	Eve Christelle	Female	Cote d'Ivoire
9	Yoboue Yah-Kan	Monique	Female	Cote d'Ivoire
10	N'da Gabe	Boaz Obed	Male	Cote d'Ivoire
11	Kone	Aboulaye	Male	Cote d'Ivoire
12	Yao Yann	Armel Koto	Male	Cote d'Ivoire
13	Kintossou Akouavi	Pierrette	Female	Cote d'Ivoire

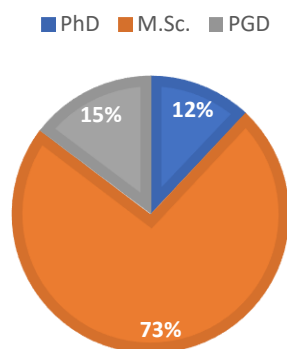
2023/2024 PhD Biotechnology

S/No.	Name	Gender	Reg. No.	Country
1	Okoro Peculiar Nwanyibunwa	Female	P23LSBC9005	Nigeria
2	Obademi Justina Seun	Female	P23LSBC9011	Nigeria
3	Lamin BS Dibba (The Gambia)	Male	P23LSBC9015	Gambia
4	Atoh Cedric Munu Tamuton (Cameroon)	Male	P23LSBC9001	Cameroon

Graduates from Postgraduate Programmes

PROGRAMMES	NUMBER
PhD	9
M.Sc. Biotechnology	56
PGD Forensic Biotechnology	11

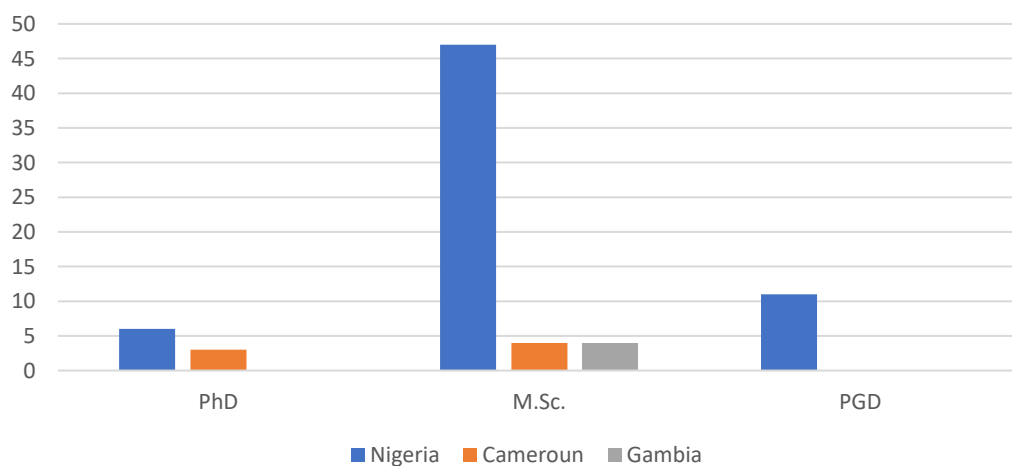
GRADUATES FROM POSTGRADUATE PROGRAMMES



Graduates by Country of Origin

Country	PhD	M.Sc.	PGD
Nigeria	6	47	11
Cameroun	3	4	
Gambia		4	

Graduates by Country of Origin



List of PG Students Graduated under ACE-NTDFB

S/N	Name	Registration No.	Title for the dissertation/thesis	Program	Year of Graduation	Research Field	Country
PhD Biotechnology							
1	GWANI Helena Enoch	P13SCBC9045	The use of Mutated Genes Leading to Inactive Forms of Cysteine Proteases (Berghepain-1 and Berghepain-2) as DNA Vaccines Against Malaria	PhD Biotechnology	2019	Malaria	Nigeria
2	Aminu Bashir YUSUF	P13SCBC9001	<i>Trypanosoma brucei</i> Major Surface Protease-B: A Putative Candidate for DNA Vaccine Development	PhD Biotechnology	2022	Trypanosomiasis	Nigeria
3	Flore Edwige GOUEGNI	P19LSBC9185	Investigation of Immunological Potentials of <i>Trypanosoma congolense</i> Flagellar Pocket's Membrane Bound Acid Phosphatase	PhD Biotechnology	2023	Trypanosomiasis	Nigeria
4	Amaya Jobin HABILA	P13SCBC9004	Studies on the Potential Induction of Immune Response	PhD Biotechnology	2023	Trypanosomiasis	Nigeria

			by <i>Trypanosoma brucei</i> Glycerol Kinase in Balb/C Mice				
5	Yousseuf Mfopit MOULIOM	P18LSBC9013	Characterization of Bacteria with Potential Sialidase Activity and Endosymbionts from Midgut of Tsetse Collected in Parts of west and Central Africa	PhD Biotechnology	2023	Trypanosomiasis	Cameroun
6	Raihana Abdullahi IDRIS	P15SCBC9014	Surveillance and Molecular Characterization of Human and African Trypanosomes in Kubau LGA., Kaduna State	PhD Biotechnology	2024	Trypanosomiasis	Nigeria
7	Peter Yunenui Mahbou	P18LSBC9012	Detection and Molecular Characterization of Dengue Virus in Pyretic Patients in Some Hospitals and Aedes Mosquitoes in Ngaoundere and Yaounde, Cameroon	PhD Biotechnology	2025	Dengue	Cameroon

8	Gilbert Adzenye NSADZETSEN	P19LSBC9013	Phyldynamics of Cannine Rabie Virus Infection in Nigeria and Cameroon towards optimization of a Region-specific Diagnostic tool	PhD Biotechnology	2025	Dengue	Cameroon
9	Asabe Cecilia Kogi	P21LSBC9080	Expression of Three Constructs of Trypanosoma vivax Trans-sialidase gene (TvTS1) and Assessment of their Immunogenicity in BALB/c Mice	PhD Biotechnology	2025	Trypanosomiasis	Nigeria
M.Sc. Biotechnology							
1	AUDU Elizabeth Funmilola	P13SCBC8045	Effects of Kolaviron on Lymphocytes Proliferation and Expression of Toll Like Receptor-2 and Vascular Endothelial Growth Factor-C Genes in <i>Wuchereria bancrofti</i> Infected Blood	M.Sc. Biotechnology	2017	Onchocerciasis/ Filariasis	Nigeria
2	ASHADE Noah Oluwasegun	P13SCBC8039	Molecular Characterization of <i>Simulium damnosum</i>	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Nigeria

			Complex in One of the Endemic Foci within Kaduna State, North-West, Nigeria				
3	ABRAHAM Sheyin	P13SCBC8002	Genome and Proteome Screening of <i>Onchocerca volvulus</i> Reveals Vaccine Candidates	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Nigeria
4	GAIYA Daniel Danladi	P13SCBC8023	Studies of Gene Expression Pattern of Glutathione-S-Transferase (OvGST1) in the Host (Human) and Vector <i>Simulium damnosum</i>	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Nigeria
5	ENTONU Moses Edache	P15SCBC8032	Evaluation of Actin-1 Expression in Wild Caught <i>Wuchereria bancrofti</i> Infected Mosquito Vectors in Tsafe Local Government Area, Zamfara State	M.Sc. Biotechnology	2019	Onchocerciasis/ Filariasis	Nigeria
6	OKPOKO Cheluchi Solumtochukwu	P14SCBC8112	<i>In Silico</i> Identification of Potential Drug Targets for Bovine Onchocerciasis Using	M.Sc. Biotechnology	2019	Onchocerciasis/ Filariasis	Nigeria

			Proteins from Biological Pathways of <i>Wolbachia</i> Endosymbiont of <i>Onchocerca ochengi</i>				
7	AWODABON Fomukong Hanneda	P14SCBC8046	Screening of the Proteome of <i>Onchocerca ochengi</i> for the Detection of Diagnostic Markers for Onchocerciasis	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Cameroon
8	CHUKWU Adaugo Patience	P14SCBC8047	Detection of Endosymbionts in Parous and Nulliparous <i>Simulium damnosum</i> (Black fly)	M.Sc. Biotechnology	2019	Onchocerciasis/ Filariasis	Nigeria
9	ALPHONSE Mendy	P15SCBC8072	Detection of Schistosoma Species in Central River Region of the Gambia	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Gambia
10	SANKUNG Sanneh	P15SCBC8069	Molecular Detection of Wolbachia and Filarial Nematode in Anthropophilic Mosquitoes in the Gambia	M.Sc. Biotechnology	2018	Onchocerciasis/ Filariasis	Gambia

11	SULEIMAN Mukhtar Adeiza	P13SCBC8028	Molecular Study of Rabies Virus in Slaughtered Dogs in Billiri and Kaltungo Local Government Areas of Gombe State, Nigeria	M.Sc. Biotechnology	2018	Rabies	Nigeria
12	SHEHU Nura Ibrahim	P13SCBC8036	Molecular studies of Rabies Virus N-Gene from Slaughtered Dogs in Danko/Wasagu Area of Kebbi State	M.Sc. Biotechnology	2018	Rabies	Nigeria
13	BAHAGO Samuel Adamu	P13SCBC8130	The Role of Tight Junction Proteins and Matrix Metalloproteinases in the Pathogenesis of Rabies Infection in Dogs	M.Sc. Biotechnology	2018	Rabies	Nigeria
14	YAKUBU Aliyu	P13SCBC8116	Molecular study and Risk Factors Assessment of Rabies Virus in Slaughtered Dogs from Zuru Emirate, Kebbi State	M.Sc. Biotechnology	2018	Rabies	Nigeria
15	ADAJI Joseph Otafo	P13SCBC8120	Molecular Studies of Rabies Virus Isolated in Dogs from Benue State	M.Sc. Biotechnology	2019	Rabies	Nigeria

16	OMOGOYE Femi	P13SCBC8112	Determination of Rabies Virus Antigen and Viral RNA In In-Apparently Infected Dogs in Zaria and Kaduna Areas of Kaduna State	M.Sc. Biotechnology	2019	Rabies	Nigeria
17	KANU Brenda	P14SCBC8048	Effect of Rabies Virus Infection on the Expression Levels of Pavalbumin and Secretagogin Genes in the Brain of Infected Mice	M.Sc. Biotechnology	2019	Rabies	Nigeria
18	CHIBUIKE Korie George	P14SCBC8041	Effects of Rabies Virus Infection on the Expression Levels of Calbindin D-28K and Calretinin in the Brains of Mice	M.Sc. Biotechnology	2019	Rabies	Nigeria
19	ABDULAZEEZ Maryam	P15SCBC8033	Epigenetic Modifications Associated with Type II Interferon Gamma in Challenged Virus Standard (CVS) Strain and Street Rabies Virus (SRV) Infected Mice	M.Sc. Biotechnology	2019	Rabies	Nigeria

20	EBUNOLUWA Ojedapo Comfort	P15SCBC8037	Epigenetics Associated with B7- H1 in Challenged Virus Standard (CVS) Strain and Nigerian Street Rabies Virus (SRV) Infected Mice	M.Sc. Biotechnology	2019	Rabies	Nigeria
21	STEPHEN John Arome	P14SCBC8043	Effect of Rabies Infection on Acetylcholinesterase Expression Level in Mice Brain	M.Sc. Biotechnology	2019	Rabies	Nigeria
22	DONGBA Hassan Gimba	P13SCBC8007	MIDGUT EP Protein gene expression pattern in <i>Glossina morsitans</i> , <i>sub morsitans</i> infected with <i>Trypanosoma congolensis</i>	M.Sc. Biotechnology	2018	Trypanosomiasis	Nigeria
23	YUSUF Blessing Becky	P13SCBC8052	Studies on the Expression of EP Procyclin-Like Gene in Cultured <i>Trypanosoma congolense</i>	M.Sc. Biotechnology	2018	Trypanosomiasis	Nigeria
24	LEMA Abdullahi	P14SCBC8116	<i>In vitro</i> Trypanolytic Potential of African Hedgehog (<i>Atelerix albiventris</i> L.) Serum	M.Sc. Biotechnology	2019	Trypanosomiasis	Nigeria

			Against <i>Trypanosoma</i> <i>congolense</i>				
25	TIMOTHY Rose Mshelia	P14SCBC8020	Studies on chrysin, kolaviron and rutin as potential inhibitor(s) of Trypanothione reductase in <i>Trypanosoma</i> <i>congolense</i> infection	M.Sc. Biotechnology	2019	Trypanosomiasis	Nigeria
26	ALPHA Kargbo	P15SCBC8070	Surveillance and Molecular Characterization of <i>Trypanosoma</i> Species in Cattle in Parts of the Gambia	M.Sc. Biotechnology	2018	Trypanosomiasis	Gambia
26	DIBBA BS Lamin	P16SCBC8051	Molecular Epidemiology and Genotypic Characterization of <i>Taxoplasma gondii</i> Isolated from Cats and Chickens in Zaria and Co-infection Studies with <i>Trypanosoma</i> <i>congolense</i>	M.Sc. Biotechnology	2019	Trypanosomiasis	Gambia

27	Muhammed Shaibu MUSA	P16LSBC8013	Molecular Studies on the Prevalence of Trypanosomal Infection in Cattle, Tsetse and Other Biting Flies in Selected LGAs of Kogi State, Nigeria	M.Sc. Biotechnology	2019	Trypanosomiasis	Nigeria
28	ILU Ameh	P16LSBC8018	Isolation of Trypanocidal active Components from <i>Echis ocellatus</i> Venom Against African Animal Trypanosomes	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria
29	AGEE Jerry Tersoo	P16LSBC8017	Antitrypanosomal Activity of Extracts from Four Cyanobacteria on <i>Trypanosoma brucei brucei</i>	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria
30	ABUBAKAR Sadiq Abubakar	P15SCBC8038	Effect of Combined Treatment with Copper, Zinc and Manganese on the Immunopathology of <i>Trypanosoma congolense</i> and Expression Pattern of Transialidase Gene	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria

31	JOSEPH Yahaya	P15SCBC8040	Effect of Zn^{2+} , Cu^{2+} and Mn^{2+} on the Expression Pattern of <i>Trypanosoma congolense</i> Transsialidase (TconTS) Genes in Experimentally Infected Albino Mice	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria
32	ISSA Funsho Habeeb	P17LSBC8015	Molecular Identification and Prevalence of African Animal Trypanosomes Among Cattle Distributed Within Jebba Axis of River Niger, Kwara State	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria
33	Ameh ILU	P16LSBC8018	Isolation and Characterization of Trypanocidal Active Components of The West African Saw Scaled Carpet Viper (<i>Echis ocellatus</i>) Venom	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria
34	Agee Jerry TERSOO	P16LSBC8017	Anti-Trypanosomal Activity of Extracts from Four Cyanobacteria on	M.Sc. Biotechnology	2021	Trypanosomiasis	Nigeria

			<i>Trypanosoma brucei</i>				
35	Godson Ofobuike EZE	P17LSBC8017	Anti-trypanosomal Effect of BMH-21 on <i>Trypanosoma brucei</i> <i>brucei</i> infection	M.Sc. Biotechnology	2022	Trypanosomiasis	Nigeria
36	Hauwa Ojochide MUSA	P14SCBC8118	Construction and Expression of a Recombinant DNA encoding the Cysteine Protease gene of <i>Trypanosoma</i> <i>congolense</i>	M.Sc. Biotechnology	2022	Trypanosomiasis	Nigeria
37	Aisha Shola KASHIM	P15SCBC8036	Effect of <i>Trypanosoma brucei</i> <i>brucei</i> of <i>GATA</i> 1 and <i>GATA</i> 2 gene expression in the Bone Marrow of Wistar rats	M.Sc. Biotechnology	2022	Trypanosomiasis	Nigeria
38	David Yila LAKABRA	P17LSBC8020	Detection and Molecular Epidemiology of <i>Wuchereria bancrofti</i> In Billiri/Kaltungo Districts of Gombe State	M.Sc. Biotechnology	2023	Filariasis/ Onchocerciasis	Nigeria

39	Khadijah Kubrat HARUNA	P15SCBC8034	Effect of <i>Trypanosoma brucei</i> on <i>Klf1</i> Gene Expression in the Bone Marrow and Erythroid Progenitor Cells of Infected Wistar Rats	M.Sc. Biotechnology	2023	Trypanosomiasis	Nigeria
40	Daniel Thakuma TIZHE	P18LSBC8015	Serological and Molecular Survey for Dengue Virus Infection in Febrile Suspected Patients in Selected Local Government Areas in Adamawa State, Nigeria	M.Sc. Biotechnology	2023	Dengue	Nigeria
41	Shadrack Dangabar APOLLOS	P18LSBC8067	Assessment of Redox Status and the Expression of <i>P53</i> And <i>PARP1</i> Genes in <i>Drosophila melanogaster</i> Exposed to Isometamidium Chloride	M.Sc. Biotechnology	2023	Filariasis/ Onchocerciasis	Nigeria
42	Friday Molabo IDOWU	P18LSBC8346	Molecular Detection of <i>Trypanosoma brucei gambiense</i> and <i>Spiroplasma</i> Species	M.Sc. Biotechnology	2023	Trypanosomiasis	Nigeria

			in Wild Tsetse Flies from Kainji Lake National Park and Yankari Game Reserve				
43	Jeff Ver SAI	P19LSBC8885	Identification and Characterisation of Kunitz Protein Gene from Blackfly (<i>Simulium damnosum</i>)	M.Sc. Biotechnology	2023	Filariasis/ Onchocerciasis	Nigeria
44	Mukhtar ALIYU	P18LSBC8071	Prevalence of Microsporidia and Its Coinfection with <i>Plasmodium falciparum</i> And <i>Wuchereria bancrofti</i> Within Ahmadu Bello University, Zaria, Kaduna State, Nigeria	M.Sc. Biotechnology	2023	Filariasis/ Onchocerciasis	Nigeria
45	Cedric Munu Tamuton ATOH	P18LSBC8080	Endosymbionts and Trypanosome Co-Infection in Tsetse Flies of Yankari Game Reserve Bauchi State, Nigeria	M.Sc. Biotechnology	2023	Trypanosomiasis	Cameroun

46	Umar Saidu	P18LSBC8070	Cell-based Screening of Merck KGaA Health Care Open Global Health Library for Identification of New Drug Candidates for the treatment of Schistosomiasis	M.Sc. Biotechnology	2023	Filariasis/ Schistosomiasis	Nigeria
47	Marceline Temben MBANWEI	P18LSBC8081	Prevalence of Trypanosoma sp. and its associated Factors among Cattle in Six Divisions of North-West Region Cameroun	M.Sc. Biotechnology	2023	Trypanosomiasis	Cameroun
48	Gideon Joseph Ibrahim	P18LSBC8060	Effect of Trypanosoma brucei brucei infection on Indigenous Chicken and Search for Parasitic Factors in the Blood	M.Sc. Biotechnology	2023	Trypanosomiasis	Nigeria
49	Gaelle Majindab Nji	P18LSBC8079	Evaluation of Cytotoxic and Genotoxic Potentials of Saba florida and Albuca nigritana Plant Extarcts Locally Used in the	M.Sc. Biotechnology	2024	Trypanosomiasis	Cameroun

			Treatment of Trypanosomiasis				
50	OGBU LOVINA CHINYERE	P16LSBC8012	Cytotoxic and genotoxic potentials of some medicinal plants used in the treatment of trypanosomiasis.	M.Sc. Biotechnology	2024	Trypanosomiasis	Nigeria
51	Olabode Charles Samuel	P19LSBC8011	Molecular Characterization of New Bacterial Cellulose Hydrogel producing Gluconoacetobacter isolate and Cloning of its complete BCS genes in two Co-expression vectors	M.Sc. Biotechnology	2024	Industrial /Bioprocess	Nigeria
52	Agatha Seember UKANDE	P19LSBC8020	Whole Genome Sequencing of Rabies Virus from Slaughtered Trade Dogs in Jema'a and Lere Local Government Areas of Kaduna State, Nigeria	M.Sc. Biotechnology	2024	Rabies	Nigeria

53	Ibrahim Waziri Zubairu	P19LSBC8013	Optimization of Bacterial Cellulose Hydrogel by Genetically Modified Escherichia coli BL21(DE3) Plyss using Pineapple peels as a Carbon source	M.Sc. Biotechnology	2025	Industrial /Bioprocess	Nigeria
54	Abubakar SANI	P21LSBC8014	Study on Molecular and Morphological Changes of Reticulocyte Maturation from Individuals with AA and AS Genotypes	M.Sc. Biotechnology	2025	Genetic Diseases	Nigeria
55	Unity Jojo BIBINU	P19LSBC8040	An Optimised Warmstart Colorimetric Loop-Mediated Isothermal Amplification for the Specific Detection of Mycobacterium leprae	M.Sc. Biotechnology	2025	Molecular Diagnostics	Nigeria
56	Naziru Dayaso ABDULKADIR	P21LSBC8028	Immunoinformatic Design, Genetic Construction and Expression of a	M.Sc. Biotechnology	2025	Vaccine Development	Nigeria

			Multi-Epitope Rotavirus Vaccine				
57	Wilson HAMMAN	P21LSBC8199	Expression Levels of Irf4 and Stat1 Genes in rabies Infected Mice Brain	M.Sc. Biotechnology	2025	Rabies	Nigeria
PGD Forensic Biotechnology							
1	MUSA Kafilat	P15SCBC7003	Correlation Among ABO Blood Group, Hemoglobin, Genotype, Lip Print, Fingerprint, Voice Print Patterns in a 28 Indigenous Hausa Population of Majeru, Dutsen-Abba, Zaria, Kaduna State	PGD Forensic Biotechnology		Forensic	Nigeria
2	USMAN Abdulmumeen Baba	P15SCBC7004	Assessment of Lip Prints Pattern and Blood in Karabonde Community of New Bussa in Niger State, Nigeria	PGD Forensic Biotechnology		Forensic	Nigeria
3	KABIR Kabara Mustapha	P15SCBC7005	Determination of the Gender of Baby Rabbit Using Y-Chromosomes Primer	PGD Forensic Biotechnology		Forensic	Nigeria

4	INIABASI Edmund Sylvester	P15SCBC7009	Optimization of DNA Extraction from Hair Shaft of Wistar Albino Rats, Dog, Cat and Horse Using Different Concentrations Mercaptoethanol	PGD Forensic Biotechnology		Forensic	Nigeria
5	FALALU Auwal Kabir	P15SCBC7011	Relationship Between Blood Group, Genotype and Fingerprint Patterns in People of Zaria, Kaduna State, Nigeria	PGD Forensic Biotechnology		Forensic	Nigeria
6	YUSUF Waliyyulah	P15SCBC7013	Identification of X- Chromosomal Gene in Maternal Plasma DNA and Foetal DNA	PGD Forensic Biotechnology		Forensic	Nigeria
7	ZUBAIR Halima Sadiya	P15SCBC7001	Determination of Sex Based on Polymerase Chain Reaction Amplification of sry Gene from DNA Isolated from Buccal Swab of Individual	PGD Forensic Biotechnology		Forensic	Nigeria

8	YUSUF Saka Olanrewaju	P15SCBC7002	Optimization of DNA Concentration and Analysis of Intensity of its Distribution in the Teeth Compare with Buccal Swab in Albino Rat (<i>Rattus norvegicus</i>)	PGD Forensic Biotechnology		Forensic	Nigeria
9	ANYANLOWO Abdulasheed Tope	P15SCBC7012	Sociodemographic, Microscopic and Mitochondrial DNA Studies on Natural and Artificial Hair Type Amongst Female Students in Ahmadu Bello University, Zaria	PGD Forensic Biotechnology		Forensic	Nigeria
10	JOHN Samuels Elejo	P16LSBC7003	Quantification and Purity Assessment of Touch DNA Extracted from Latex Hand Gloves	PGD Forensic Biotechnology		Forensic	Nigeria
11	ORLU Juliet	P16LSBC7054	Comparison of Quality of DNA Isolated from Preserved and Discarded Blood Samples	PGD Forensic Biotechnology		Forensic	Nigeria

ACENTDFB ALUMNI - PhD and MSc

S/N	FULL NAME	GENDER	DEGREE	YEAR OF GRADUATION	COUNTRY OF ORIGIN	RESEARCH FIELD	EMPLOYMENT STATUS
1	Helena Fodoke	Female	PhD Biotechnology	2019	Nigeria	Malaria	Employed
2	Aminu Bashir YUSUF	Male	PhD Biotechnology	2022	Nigeria	Trypanosomiasis	Employed
3	Flore Edwige GOUEGNI	Female	PhD Biotechnology	2023	Cameroon	Trypanosomiasis	Employed
4	Amaya Jobin HABILA	Female	PhD Biotechnology	2023	Nigeria	Trypanosomiasis	Employed
5	Youssof Mfopit Mouliom	Male	PhD Biotechnology	2023	Cameroon	Trypanosomiasis	Employed
6	Raihana Abdullahi IDRIS	Female	PhD Biotechnology	2024	Nigeria	Trypanosomiasis	Employed
7	Peter Yunenui Mahbou	Male	PhD Biotechnology	2025	Cameroon	Dengue	Employed
8	Gilbert Adzemye NSADZETSEN	Male	PhD Biotechnology	2025	Cameroon	Dengue	Employed
9	Asabe Cecilia Kogi	Female	PhD Biotechnology	2025	Nigeria	Trypanosomiasis	Employed
10	AUDU Elizabeth Funmilola	Female	MSc Biotechnolgy	2017	Nigeria	Onchocerciasis/ Filariasis	Employed
11	ASHADE Noah Oluwasegun	Male	MSc Biotechnolgy	2018	Nigeria	Onchocerciasis/ Filariasis	Employed
12	ABRAHAM Sheyin	Male	MSc Biotechnolgy	2018	Nigeria	Onchocerciasis/ Filariasis	Unemployed
13	GAIYA Daniel Danladi	Male	MSc Biotechnolgy	2018	Nigeria	Onchocerciasis/ Filariasis	Employed
14	ENTONU Moses Edache	Male	MSc Biotechnolgy	2019	Nigeria	Onchocerciasis/ Filariasis	Employed
15	OKPOKO Cheluchi Solumtochukwu	Female	MSc Biotechnolgy	2021	Nigeria	Onchocerciasis/ Filariasis	Employed

16	AWODABON Fomukong Hanneda	Male	MSc Biotechnolgy	2018	Cameroon	Onchocerciasis/ Filariasis	Employed
17	CHUKWU Adaugo Patience	Female	MSc Biotechnolgy	2019	Nigeria	Onchocerciasis/ Filariasis	Employed
18	ALPHONSE Mendy	Male	MSc Biotechnolgy	2018	Gambia	Onchocerciasis/ Filariasis	Employed
19	SANKUNG Sanneh	Male	MSc Biotechnolgy	2018	Gambia	Onchocerciasis/ Filariasis	Employed
20	SULEIMAN Mukhtar Adeiza	Male	MSc Biotechnolgy	2018	Nigeria	Rabies	Employed
21	SHEHU Nura Ibrahim	Male	MSc Biotechnolgy	2018	Nigeria	Rabies	Employed
22	BAHAGO Samuel Adamu	Male	MSc Biotechnolgy	2018	Nigeria	Rabies	Unemployed
23	YAKUBU Aliyu	Male	MSc Biotechnolgy	2018	Nigeria	Rabies	Employed
24	ADAJI Joseph Otafo	Male	MSc Biotechnolgy	2019	Nigeria	Rabies	Employed
25	OMOGOYE Femi	Male	MSc Biotechnolgy	2020	Nigeria	Rabies	Self Employed
26	KANU Brenda	Female	MSc Biotechnolgy	2019	Nigeria	Rabies	Employed
27	CHIBUIKE Korie George	Male	MSc Biotechnolgy	2019	Nigeria	Rabies	Self Employed
28	ABDULAZEEZ Maryam	Female	MSc Biotechnolgy	2020	Nigeria	Rabies	Unemployed
29	EBUNOLUWA Ojedapo Comfort	Female	MSc Biotechnolgy	2020	Nigeria	Rabies	Employed
30	STEPHEN John Arome	Male	MSc Biotechnolgy	2019	Nigeria	Rabies	Unemployed
31	DONGBA Hassan Gimba	Male	MSc Biotechnolgy	2018	Nigeria	Trypanosomiasis	Unemployed

32	YUSUF Blessing Becky	Female	MSc Biotechnolgy	2018	Nigeria	Trypanosomiasis	Employed
33	LEMA Abdullahi	Male	MSc Biotechnolgy	2018	Nigeria	Trypanosomiasis	Employed
34	TIMOTHY Rose Mshelia	Female	MSc Biotechnolgy	2019	Nigeria	Trypanosomiasis	Employed
35	ALPHA Kargbo	Male	MSc Biotechnolgy	2018	Gambia	Trypanosomiasis	Employed
36	DIBBA Lamin	Male	MSc Biotechnolgy	2019	Gambia	Trypanosomiasis	Employed
37	Muhammed Shaibu MUSA	Male	MSc Biotechnolgy	2021	Nigeria	Trypanosomiasis	Self Employed
38	ILU Ameh	Male	MSc Biotechnolgy	2022	Nigeria	Trypanosomiasis	PhD Fellow
39	AGEE Jerry Tersoo	Male	MSc Biotechnolgy	2021	Nigeria	Trypanosomiasis	Employed
40	ABUBAKAR Sadiq Abubakar	Male	MSc Biotechnolgy	2022	Nigeria	Trypanosomiasis	Employed
41	JOSEPH Yahaya	Male	MSc Biotechnolgy	2022	Nigeria	Trypanosomiasis	PhD Fellow
42	ISSA Funsho Habeeb	Male	MSc Biotechnolgy	2022	Nigeria	Trypanosomiasis	PhD Fellow
43	Godson Ofobuike EZE	Male	MSc Biotechnolgy	2022	Nigeria	Trypanosomiasis	Employed
44	Hauwa Ojochide MUSA	Female	MSc Biotechnolgy	2023	Nigeria	Trypanosomiasis	Unemployed
45	Aisha Shola KASHIM	Female	MSc Biotechnolgy	2023	Nigeria	Trypanosomiasis	Employed
46	David Yila LAKABRA	Male	MSc Biotechnolgy	2022	Nigeria	Filariasis/ Onchocerciasis	Employed
47	Khadijah Kubrat HARUNA	Female	MSc Biotechnolgy	2023	Nigeria	Trypanosomiasis	Self Employed
48	Daniel Thakuma TIZHE	Male	MSc Biotechnolgy	2023	Nigeria	Dengue	Employed

49	Shadrack Dangabar APOLLOS	Male	MSc Biotechnolgy	2023	Nigeria	Filariasis/ Onchocerciasis	Employed
50	Friday Molabo IDOWU	Male	MSc Biotechnolgy	2023	Nigeria	Trypanosomiasis	Employed
51	Jeff Ver SAI	Male	MSc Biotechnolgy	2023	Nigeria	Filariasis/ Onchocerciasis	Unemployed
52	Mukhtar ALIYU	Male	MSc Biotechnolgy	2023	Nigeria	Filariasis/ Onchocerciasis	Employed
53	Cedric Munu Tamuton ATOH	Male	MSc Biotechnolgy	2023	Cameroon	Trypanosomiasis	Unemployed
54	Umar Saidu	Male	MSc Biotechnolgy	2023	Nigeria	Filariasis/ Schistosomiasis	Employed
55	Marceline Temben MBANWEI	Female	MSc Biotechnolgy	2023	Cameroon	Trypanosomiasis	Employed
56	Gideon Joseph Ibrahim	Male	MSc Biotechnolgy	2023	Nigeria	Trypanosomiasis	Employed
57	Gaelle Majindab Nji	Female	MSc Biotechnolgy	2024	Cameroon	Trypanosomiasis	Unemployed
58	Lovina Chinyere Ogbu	Female	MSc Biotechnolgy	2024	Nigeria	Trypanosomiasis	Self Employed
59	Olabode Charles Samuel	Male	MSc Biotechnology	2024	Nigeria	Industrial / Bioprocess	Unemployed
60	Agatha Seember UKANDE	Female	MSc Biotechnology	2024	Nigeria	Rabies	Unemployed
61	Ibrahim Waziri Zubairu	Male	MSc Biotechnology	2025	Nigeria	Industrial/Bioprocess	Unemployed
62	Abubakar SANI	Male	MSc Biotechnology	2025	Nigeria	Genetic Diseases	Unemployed
63	Unity Jojo BIBINU	Female	MSc Biotechnology	2025	Nigeria	Molecular Diagnostics	Unemployed
64	Naziru Dayaso ABDULKADIR	Male	MSc Biotechnology	2025	Nigeria	Vaccine Development	Unemployed

STUDENTS AND STAFF SUPPORT SERVICES

a. Students Support Services

- **Incentives for Students**

- Payment of tuition fees (foreign students only)
- Monthly stipends (Foreign students only)
- Provision of research consumables
- Financial support for bench works at research labs of regional and international collaborating partners
- Sponsorship for field work
- Sponsorship to Scientific conferences & Workshops
- Provision of free hostel accommodation (foreign students only-preference given to female students)
- Support for Grant writing
- English Language Proficiency training for non-English speaking students
- Visa/immigration support services

Staff Support Services

- **Incentives for Staff**

- Sponsorship to national workshops & conferences
- Sponsorship to International workshop and conference
- Faculty exchange
- Faculty internship in Industries
- Short Research visits to regional and international laboratories
- Payment for publications (page charge) in certain cases
- Support for Grant writing

ACCREDITATION OF ACADEMIC PROGRAMMES

S/NO	PROGRAMME	ACCREDITING BODY
1	M.Sc. Biochemistry	Royal Society of Biology; Higher Council for the Evaluation of Research and Education (HCERES)
2	PhD Biochemistry	Royal Society of Biology; Higher Council for the Evaluation of Research and Education (HCERES)
3	M.Sc. Biotechnology	National Universities Commission (NUC); Royal Society of Biology; Higher Council for the Evaluation of Research and Education (HCERES)
4	PhD Biotechnology	National Universities Commission (NUC); Royal Society of Biology; Higher Council for the Evaluation of Research and Education (HCERES)
5	PGD Forensic Biotechnology	National Universities Commission
8	M.Sc. Forensic Science	National Universities Commission



ACCREDITATION DECISION

After the external programme evaluation implemented by the High Council for Evaluation of Research and Higher Education (Hcéres) in June 2019, and according to the accreditation criteria adopted by the Hcéres Board on October 4th, 2016,

**The Biotechnology PhD Program
Africa Center of Excellence in Neglected Tropical
Diseases and Forensic Biotechnology (ACENTDFB)
Ahmadu Bello University, Zaria, Nigeria**
is fully accredited for 5 years
(September 2019 - September 2024)

Paris, September 4th, 2019
Michel Cosnard, Hcéres President

Michel Cosnard



The accreditation decision issued by Hcéres does not grant any right whatsoever, whether in France or abroad. The decision to accredit or withdraw accreditation is reserved for the Hcéres Board. The decision to accredit or withdraw accreditation is based on the accreditation criteria adopted by the Hcéres Board on October 4th, 2016, and according to the accreditation criteria adopted by the Hcéres Board on October 4th, 2016.



ACCREDITATION DECISION

After the external programme evaluation implemented by the High Council for Evaluation of Research and Higher Education (Hcéres) in June 2019, and according to the accreditation criteria adopted by the Hcéres Board on October 4th, 2016,

**The Biotechnology M.Sc. Program
Africa Center of Excellence in Neglected Tropical
Diseases and Forensic Biotechnology (ACENTDFB)
Ahmadu Bello University, Zaria, Nigeria**
is fully accredited for 5 years
(September 2019 - September 2024)

Paris, September 4th, 2019
Michel Cosnard, Hcéres President

Michel Cosnard



The accreditation decision issued by Hcéres does not grant any right whatsoever, whether in France or abroad. The decision to accredit or withdraw accreditation is reserved for the Hcéres Board. The decision to accredit or withdraw accreditation is based on the accreditation criteria adopted by the Hcéres Board on October 4th, 2016, and according to the accreditation criteria adopted by the Hcéres Board on October 4th, 2016.

High Council for the Evaluation of Research and Higher Education

**Accreditation Certificate**

After the external evaluation implemented by the High Council for Evaluation of Research and Higher Education (HCÉRES) in October 2022, and according to the accreditation criteria adopted by the HCÉRES Board on 29th September 2022,

The Ph.D. Biochemistry

Department of Biochemistry
Ahmadu Bello University
Zaria, Nigeria

is fully accredited for 5 years
(March 15th 2024 - March 15th 2029)

Paris, 15th March 2024

Stéphane Le Boulter
Acting President of the HCÉRES

The accreditation decision issued by HCÉRES confers an accreditation label and does not infer recognition in France of the qualifications issued by the accredited institution. The HCÉRES accreditation process therefore has no impact on the process of having the qualifications of accredited institutions recognized in France.

High Council for the Evaluation of Research and Higher Education

**Accreditation Certificate**

After the external evaluation implemented by the High Council for Evaluation of Research and Higher Education (HCÉRES) in October 2022, and according to the accreditation criteria adopted by the HCÉRES Board on 29th September 2022,

The Ph.D. Biochemistry

Department of Biochemistry
Ahmadu Bello University
Zaria, Nigeria

is fully accredited for 5 years
(March 15th 2024 - March 15th 2029)

Paris, 15th March 2024

Stéphane Le Boulter
Acting President of the HCÉRES

The accreditation decision issued by HCÉRES confers an accreditation label and does not infer recognition in France of the qualifications issued by the accredited institution. The HCÉRES accreditation process therefore has no impact on the process of having the qualifications of accredited institutions recognized in France.

TEACHING AND RESEARCH FACILITIES

The Centre maintains laboratories that feature equipment and facilities to ensure excellent teaching, learning and research. Some of the laboratories in the centre and their contents include the following:

1. General Research and Training Lab

S/N	EQUIPMENT	QTY
1	Electrophoresis tank (Mini, Midi and Maxi), with Power System, 3 nos	3
2	Nano Drop Spectrophotometer	2
3	Haematospin	2
4	pH Meter, bench-top	1
5	Spectrophotometer, UV-VIS	1
6	Analytical Balance	2
7	Centrifuge, standing and bench types	3
8	Gel documentation system with Screen	2
9	PCR System, conventional, 3 nos	3
10	Orbital incubator	1
11	Laminar flow Cabinets	2
12	Water bath	1
13	Microscope, Binocular, 4 nos	4

Deutscher Forschung Gemeinschaft (DFG) Lab

S/N	Type of Equipment	Qty
1	PCR System, Gradient	1
2	Nano Drop Spectrophotometer, 2 nos	1
3	Microscope, Binocular	
4		

Bio-Bank Room

S/N	Type of Equipment	Qty
1	Ultra Low Freezer, -86°C, 2 nos	2
2	Low Temperature Freezer, -20°C	1

Diagnostic Lab

S/N	Type of Equipment	Qty
1	Multiplex Analyzer, Luminex	1
2	Biochemistry Analyzer	1
3	Polymerase Chain Reaction (PCR) Machine, Gradient	1
4	Polymerase Chain Reaction (PCR) Machine, Conventional	1
5	ELISA Plate Reader, with Plate washer	1
6	Laminar Flow Cabinet	1
7	Flow Cytometer,	1
8	Nano Drop Spectrophotometer	1
9	Electroporator	1
10	Tissue Lyser	1
11	Drying Oven, 97L	1
12	Centrifuge, bench top	1
13	Centrifuge, Haematocrit	2
14	Freezer, -20°C	1

Covid-19 Testing Lab

S/N	Description	Qty
1	Quantitative PCR (qPCR), BioRad	
2	PCR workstation- DNA extraction	
3	Nano Drop Spectrophotometer	
4	Biosafety Cabinet, Class – for inactivation	
5	Autoclaves, standing (125L, 300L) and bench type	
6	Vortex Mixer	

Clean Room Lab

S/N	Equipment	Qty
1	Real time PCR	1
2	Biosafety Safety Cabinet, Class III	1
3	Biosafety Safety Cabinet, Class II	1
4	DNA/RNA UV-Cleaner	1
5	Heating block	1
6	Vortex Mixer	1
7	Centrifuge, mini	1

Forensic Lab

S/N	Equipment	Qty
1	Ballistic comparison microscope - for	1
2	Binocular Compound microscope	1
3	Cyanoacrylate Fume chambers	1
4	Centrifuge, bench top	1
5	Evidence drying cabinet	1
6	Finger print powder workstation	1
7	Fluorescence microscope	1
8	Footwear/tyre tract Analyzer, Milu L10 plus	1
9	Forensic Light source	1
10	Hematocrit centrifuge	1
11	Histology Tissue processor, automatic	1
12	Forensic camera, with UV-Vis light capability	1
13	Automated Nucleic Acid Extractor	1

Other Research Facility

- a. **Animal House** - ruminants (small & large) and other others animals. it also houses an incinerator

The Centre is also pursuing ISO 15189:2022 accreditation for its laboratories As expected of a Centre of Excellence, all the equipment are in excellent working condition and they undergo routine maintenance and re-calibration.



DFG Laboratory

***DFG Laboratory******General Laboratory***



Genetic Engineering Laboratory



PCR Room

***Bioinformatics Laboratory***

***Forensic Laboratory******Preparatory Room***



Tissue Culture Lab



NANOPAC 300P



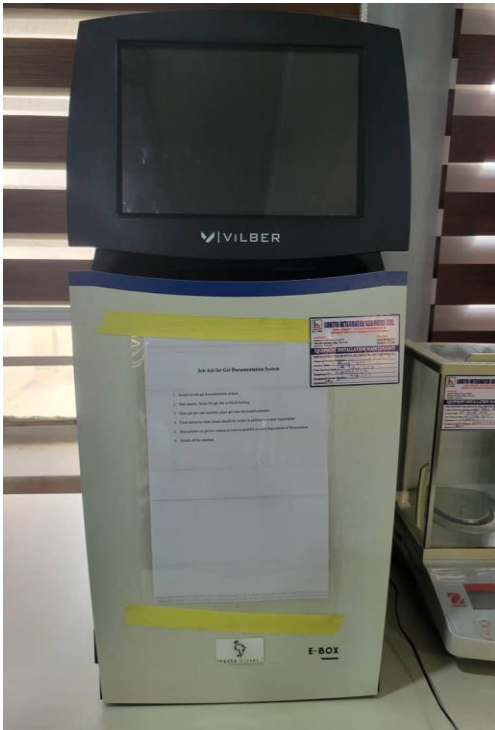
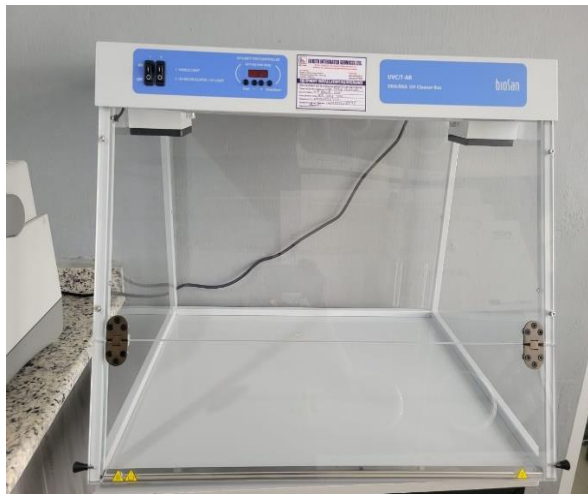
Electrophoresis tank

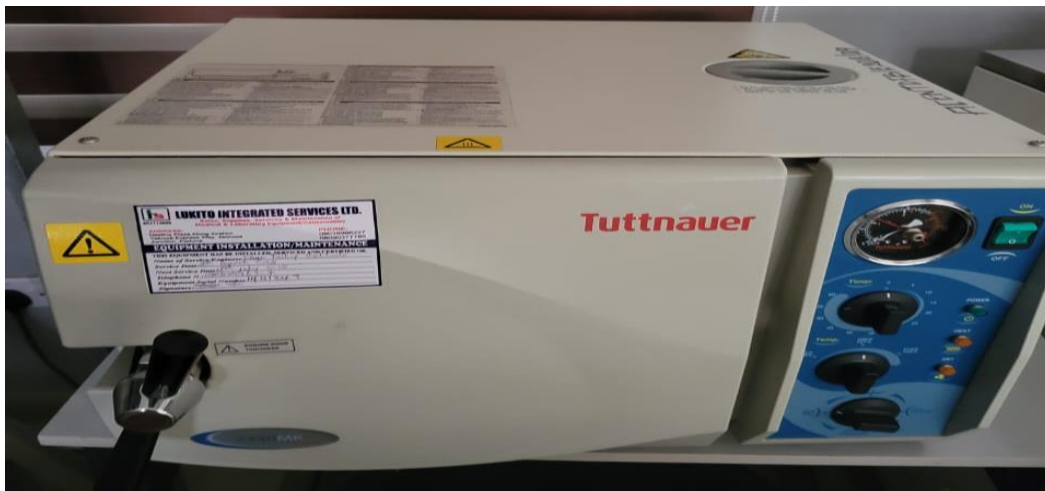
***Nano Drop One******Milliplex******Haematospin******Thermal Cycler***

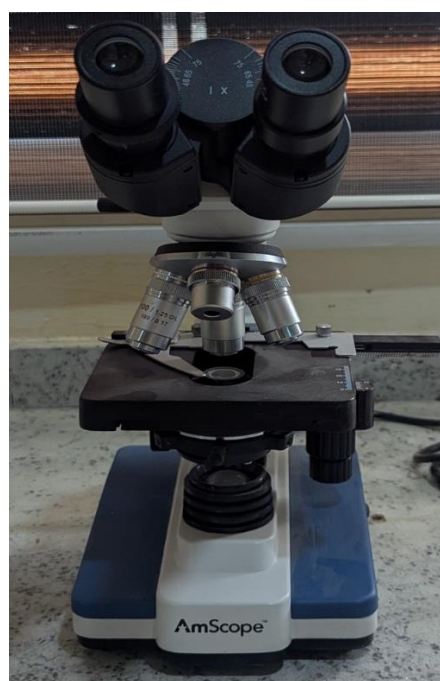
***Thermal Cycler******Centrifuge******Mini Spin******Digital vortex mixer***

**Eporator****Centrifuge****Centrifuge****Dry bath**

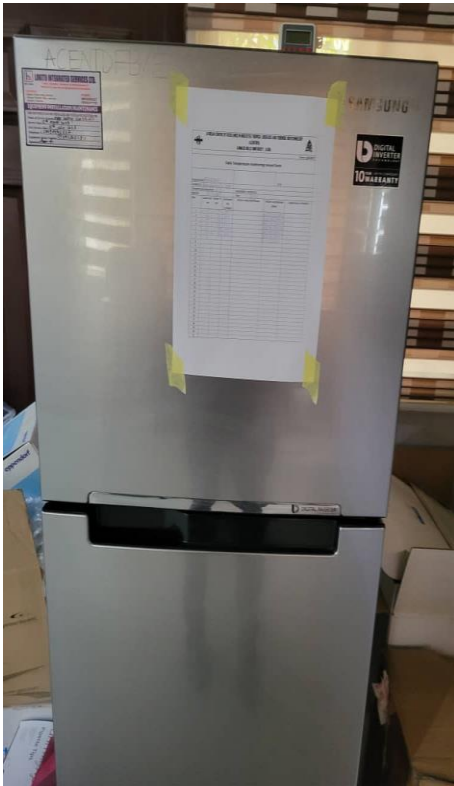
***QPCR with system******PCR******Spectrophotometer***

***Gel Documentation Chamber******Benchtop meter******Orbital incubator******PCR workstation***

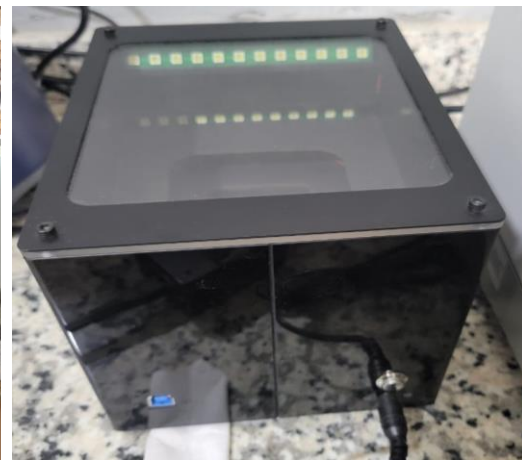
**Laminar Flow****Microscope****Autoclave**

***Class 11 cabinet******Freezer******Microscope******Fluorescence microscope***

***Centrifuge******Tissue lyser******Ballistic comparison microscope***

**Fridge****Fridge****Freezer****Freezer**

***Elisa plate Reader******Elisa plate washer******Biochemistry analyser******PCR (gradient)***

**Mini centrifuge****Hematocrit centrifuge****Microwave Oven****Heating block**

***Real time PCR******DNA/RNA UV-Cleaner******Class II BSC***

***Class III BSC******Ultra-low freezer******Binocular Compound microscope Purair******DWS Ductless Downflow Workstation***



***SafeFUME Cyanoacrylate Fume chambers with stand
Evidence drying cabinet***

***Histology Tissue processor******Bench top centrifuge******Forensic light source***

**Footwear/tire tract, Milu L10 plus****Forensic photography****Weighing balance****Automated Nucleic Acid Extractor**

***Digital Microscope******Biosafety Analyzer******Laboratory Refrigerated Centrifuge***

**Stirred Water Bath****Microspin****Multi-Vortex****Microplate Reader**

**Scale****Heating/Cooling Dry Block****Laboratory Centrifuge****Dry Heat Sterilizer/Oven**



Automated Fingerprinting Identification System

S/NO	NAME	DESCRIPTION
1	Laboratory Accreditation (ISO 15189:2022)	Calibration of all pipettes for DNA/RNA amplifications.
	i) Pipettes	Calibrations and servicing
	ii) PCR machines	-Laboratory Quality Manual -Laboratory Handbook
	iii) Documentation	-SOPs for molecular biology analysis of samples Training of Laboratory technologist

PARTNERSHIPS AND COLLABORATIONS

a. National

S/NO	NAME OF ORGANIZATION	AREAS OF COLLABORATION
1.	Nigerian Institute for Trypanosomiasis (and Onchocerciasis) Research (NITR), Kaduna, Nigeria	Collaborative research and joint training workshops
2.	National Institute for Medical Research (NIMR), Lagos, Nigeria	Collaborative research, supervision and joint training workshops
3.	SightSavers, Nigeria	1. Internship Placement for ACE students 2. Capacity Building 3. Advocacy for the elimination, prevention, control, treatment and elimination of neglected tropical diseases 4. Sample Analysis 5. Accreditation of Centres Laboratories
4.	Africa Field Epidemiology Network (AFENET), Nigeria	Internship placement for ACE Students
5.	Friends for Global Health Initiative, Nigeria	Internship placement for ACE Students
6.	Inqaba Biotec, West Africa	1. Supply of Research Materials 2. Capacity Training 3. Procurement of Research Equipment Internship Placement of ACENTDFB Students
7.	DNA Labs, Kaduna	Internship placement for ACE Students
8.	EHA Clinics, Abuja	1. Student Internship 2. Capacity Building 3. Research Collaboration
9.	Providian Medical Diagnostic Centre, Kano	Internship placement for ACE Students
10.	Precision Medical Lab, Kaduna	Internship placement for ACE Students

b. Regional

S/NO	NAME OF ORGANIZATION	AREAS OF COLLAORATION
1.	University of Ngaoundere, Cameroon	1. Exchange of Teachers and students in the fields of Biological Sciences; Biomedical Sciences; Chemistry; Computer Science; Earth Sciences; Environmental Sciences; Mathematics and Physics 2. Joint training workshops 3. Provision of bench spaces for student research works 4. Joint Collaborative Research and Supervision
2.	Institute for Agricultural Research for Development (IRAD), Cameroon	1. Joint training workshops. 2. provision of bench spaces for student research works, 3. joint collaborative research and supervision
3.	Kumasi Centre for Collaborative Research (KCCR), Kwame Nkrumah Univ. of Science and Technology, Ghana	1. Student Internship 2. Joint training workshops. 3. Provision of bench spaces for student research works, 4. Joint collaborative research and supervision
4.	Centre International e Recherche-Development sur l'Elevage en zone Subhumide (CIRDES), Bobo-Dioulasso, Burkina Faso	1. Faculty Exchange 2. Provision of Bench Space for Research Work (Short Research Visits) 3. Joint Research Work
5.	Insectarium Bobo Dioulasso – Campagne d'Eradication de la mouche Tse-tse et de la Trypanosomiase au Burkina Faso (IBD-CETT), Bobo-Dioulasso, Burkina Faso	1. Faculty Exchange 2. Provision of Bench Spaces for Research Works 3. Joint Research Work

c. International

S/NO	NAME OF ORGANIZATION	AREAS OF COLLABORATION
	University of Bremen, Germany	1. Exchange of Faculty Members 2. Joint teaching and supervision 3. Provision of bench work for students 4. Joint grants sourcing (ERASMUS plus)
	Institute of Tropical Medicine (NEKKEN), Nagasaki University, Japan	1. Exchange of Faculty Members and Administrative Staff 2. Exchange of Students 3. Collaborative Research Projects 4. Joint teaching and supervision 5. Exchange of Academic information and materials 6. Provision of bench work for students
	J-WEL, MIT, Cambridge, USA	Human resource development, Training workshops, joint collaborative research, access to educational resource materials.
	Centre for Science and Technology for Non-Aligned Movement and other Developing Countries (NAM S&T), Delhi, India	1. Facilitate contacts amongst scientific community in Developing Countries 2. Cooperation in development of activities to foster and promote human resource development, capacity building and scientific research 2. Joint Fellowship Programmes for Short-term research opportunities
	WIPO-BVGH- Bio Ventures for Global Health, USA	Entrepreneurship training and product development
	Haizea Prados master's in development and international Cooperation Studies, University of Barque Country: Titled: Rural Women and Neglected Tropical Diseases in Nigeria: Intersectionality of Vulnerabilities Through a Pilot Study on Schistosomiasis	Collaborative Schistosomiasis Research in rural women in Nigeria/ Staff support, Selection of study states, Advocacy, Administration of questionnaire, financial support of the ACENTDFB Team (Transportation, DTA PR/Incentivization)

SOME SELECTED BENEFITS OF OUR PARTNERSHIPS

Our existing internship programs offer students opportunities for industrial collaboration in research and capacity building. The center covers expenses, including transportation, meals, accommodation, and medical insurance for the interns.

- We have a strong partnership with Sightsavers International, an NGO saddled with mission to prevent avoidable blindness, treat and prevent debilitating diseases (onchocerciasis, trachoma, and filariasis). The scope of our partnership covers sample analyses, student and faculty internship, capacity building, etc. We already have an MoU with them. In addition, Sightsavers financed training of two (2) laboratory technologists of the centre for two weeks laboratory training on sample analyses at Liverpool School of Tropical Medicine and Hygiene (LSTMH). It is also spearheading the building capacity and designation of the center's laboratory as one of the four National NTD Laboratory and the on-going national accreditation process of the Centre's laboratories. They have been carrying out the sample analyses in the centre's laboratories and facilitated the training of laboratory and field personnels on NTDs.
- DNA Labs, a privately owned laboratory provides facility our students to undertake internship. The lab carries out molecular biology related activities and is one of the NCDC-designated laboratories for COVID-19 testing and certification.
- Precision Biomedicals located in Kaduna, is a newly established medical diagnostic enterprise where our students undertake internships. This lab offers a wide range of cutting-edge diagnostic solutions to facilitate accurate and timely detection, monitoring, and management of various diseases. Their diagnostic tools, including molecular diagnostics, immunoassays, Microbiology and clinical chemistry investigation.
- There is ongoing partnership with EHA Clinics, situated in Abuja and Kano. Its healthcare facilities are renowned for their exceptional healthcare services. With a primary objective of connecting patients with healthcare services regardless of the setting, be it the clinic, home, or through modern online and

mobile platforms, EHA Clinics are recognized globally for their superior quality care and services.

- There is also a collaboration with Providian Medical Diagnostic Center, Kano which provides laboratory internship support Kano. This facility offers Radiography and Laboratory Services, providing a comprehensive array of medical diagnostic tests such as MRI, CT scan, Ultrasound, and various other medical laboratory investigations.

Other partners include AFENET, a non-profit alliance of epidemiology training programs, and Inqaba Biotec West Africa Ltd (IBWA), which provides genomics products and services to researchers in West and Central Africa. In 2015, IBWA established its first Nigerian office at the Bioscience Unit of IITA.

Signing and Exchange of Collaboration Agreement with University of Nagasaki





ENGAGEMENTS WITH THE ALUMNI

There is an existing database of the Centre's alumni at the Department of Biochemistry which is continuously updated. This database contains basic information on each alumnus such as current address, gsm no, email addresses, place of engagement.

In addition to the database link, there is a WhatsApp platform through which information for the alumni of the Centre such as announcement of opportunities for jobs, further studies and research grants, are constantly communicated. These are done as often as the need arises. There is also constant phone calls requesting for updates on their status. This is handled by the Assistant Monitoring and Evaluation Officer of the Centre. Attention of alumni are usually drawn when job opportunities are announced and, in some cases, during student recruitment exercises.

Generally, contacts with alumni of the Centre are maintained and updated using three major strategies developed by the Communication officer in collaboration with the Monitoring and

Evaluation Officer at the Centre level, and the Directorate of University Advancement at the University level. These are:

- internal communication: this is applicable to the alumni that are engaged with the university and those that secure admissions for their PhD programmes (after the completion of M.Sc.)
- external communication: periodic emails are sent particularly for job offers, scholarships, research assistantships, etc. Similarly, adverts for workshops, conferences, programme enrolments, research grant applications are also made available for alumni to participate.
- Media: all the stated social media platforms are well utilized by the centre and alumni for reaching out on various activities

Currently, there exist three social media platforms: Facebook page, WhatsApp and Twitter. The official website of the Centre is also very interactive and user friendly as such suggestions/comments are given utmost attention.

- Website: <https://acentdfb.abu.edu.ng>
- Facebook: www.facebook.com/acentdfb/
- Twitter: twitter.com/acentdfb
- Students WhatsApp/telegram platforms

ACENTDFB have been very proactive in its collaboration with its alumni in the area of capacity building. A number of its alumni are often co-opted as resource persons in the training activities of the Centre as well as acting as preceptors to students undergoing internship training in the institutions or facilities in which such alumni members are employment. Some of them have also assisted in recruiting new students from their locations or countries. This is usually achieved through contacts made directly with such alumni and in some cases, expression of intention by such alumni,

Specific examples are:

- Gambian alumni of the Centre initiated the first collaboration meeting between the Centre and the Medical Research Council of the Gambia which eventually led to the mounting of the Advanced Bioinformatics Training in in Banjul, in 2022. Alphonse Mendy and Kargbo Alpha who alumni of the Centre

facilitated the collaboration that led to the mounting of the workshop while another alumnus, Dibba Lamin participated as a resource person in this workshop. These alumni also assisted the Centre in recruitment subsequent recruitment of other Gambian students, some of which had since resumed with 2 others scheduled to resume in September 2024.

- The first set of alumni from Cameroon facilitated recruitment of 3 other students (Gilbert Nzadsetsen, Marceline Mbanwei and Gaelle Majindab) – two of them (Marceline Mbanwei and Gaelle Majindab) graduated this year (2024) and have since returned to their country.
- MSc degree graduates of the Centre that returned for their PhD are engaged in assisting new students in their practical classes and field works. Examples include Cedric Atoh and Haneda Awodagbon who after finishing their MSc programmes, enrolled for their PhD programmes and now assist other students in their bench works.

GRANTS AND AWARDS

1. Grants to the Centre

S/NO	TITLE OF GRANT	DESCRIPTION
1	Two National Research Fund Grants	Grants of \$200,000 (2021-2023) to Prof. Y.K.E. Ibrahim and Prof. M. Mamman The first grant was awarded for a research project titled “Antimicrobial Nano-reinforced Bacterial Cellulose Hydrogel (BCH) from Agro Residues–Production and Application in Wound Healing”. The research team headed by Prof YKE Ibrahim had five other professors, and five students (1 PhD and 4 MSc). The research project resulted in the whole genome sequencing of a BCH producing <i>Gluconacetobacter orientalis</i> isolated from pineapple and its deposition in the GenBank. At the end of the project, 3 MSc and 1 PhD students were graduated. A patent was obtained from the German Patent Office in 2024 for the development of BCH production from <i>G. orientalis</i> (Patent No: 20 2024 102 959) The second grant awarded to Prof. M. Mamman and his co-workers entitled “DNA and Protein Subunit Vaccines Development against African Animal Trypanosomiasis: Targeting Genes Encoding Essential Surface and Non-variable Proteins” with reference number TETF/DR&D/CE/NRF/2020/SETI/01. The research was designed to produce DNA vaccines targeting multiple essential proteins of African trypanosomes namely, membrane bound acid phosphatase (MBAP), membrane surface protein (MSP), trans-sialidase (TS) and glycerol kinase (GK). The first three proteins are on the parasite surface and are responsible for control of antigenic variation/VSG, development/differentiation, and pathology, respectively, while GK is intracellular and needed for energy production. At its completion, the research produced 4 (four) PhD graduates and findings were presented at international scientific meetings and published in scopus-indexed journals.

2	Chan Zuckerberg Initiative Grant	Grant of \$818,776 to Dr. Idowu A. Aimola (2022-2025)
3	African Postdoctoral Training Initiative Grant	Grant of \$626,000 to Dr. Idowu A. Aimola (2020-2023)
4	NIH K43 Grant	Grant of \$570,000 to Professor Emmanuel O. Balogun (2019-2023)
5	IFAD Grant	Grant of \$90,000 to 2 ACENTDFB PhD students (WANIDA) i.e. Peter Mahbou Yunenui and Yusuf Mfopit Moulloum who completed their programme
6	ERASMUS Mobility Plus to University of Bremen	9 students sponsored for Bench Work (\$7,000.00)
7	ARISE-PP Grant	Grant of \$205,000 to Dr Emmanuel Amlabu (2023)
8	European & Developing Countries Clinical Trials Partnership (EDCTP3)	Grant of €5m to Dr. Gloria D. Chechet (2025)

In addition to the above, several grant applications have been submitted by the Centre. Of these grants, one (IAEA) is successful, one (Wellcome Trust) shortlisted for final decision, two UKRI grants are under assessment while six others (UK-NHRI, D43/NIH, WAAVP-AN) are at the initial stage of preliminary evaluation. Two applications (NIHR-UK) are currently being developed for submission

2. Grants by the Centre to Support Research

To support its research objectives, the Centre awarded a seed grant of N24,520,330 to five researchers from the Ahmadu Bello University to support innovative projects addressing critical societal needs. The Awardees were:

S/NO	NAME OF BENEFICIARIES	AREAS OF RESEARCH	VALUE OF AWARD (N)
1	Professor Emmanuel O. Balogun (Biochemistry)	Developing a novel Toxoplasmosis prototype kit (ToxoRap) for commercialization	4,998,980
2	Dr. Yusuf Wada (Zoology)	Creating point-of-care lateral flow test strips (LFTSs) for simultaneous detection of malaria and typhoid fever	4,990,000
3	Umar Aliyu Umar (Biochemistry)	Novel phytomedicine to treat urogenital schistosomiasis	4,950,000
4	Umar Saidu, (Biochemistry)	Developing a botanical molluscicide to control snail hosts of schistosomiasis	4,975,850
5.	Professor Adele Dzikwi Garkida (Glass and Silicate Technology)	Upscale glass and granite waste composites as alternatives to porcelain in high-performance electrical insulators	4,605,500

The Vice-Chancellor, Ahmadu Bello University, Professor Kabiru Bala, presenting the cheques to the Awardees.



Other Awards and Recognitions include:

S/NO	BENEFICIARY	AWARDING BODY	YEAR
1	Prof. J.K.P. Kwaga	Fellow of the Nigerian Academy of Science	2018
		Member, Council of the West African Examination Council (WAEC)	2024
		JEMRA FAO/WHO consultant on microbiological risk assessment	2023 - 2028
2	Prof. Emmanuel O. Balogun	Gold Medal Merit Award for Science by Nigerian Academy of Science (NAS)	2019
		Emerging Global Leader Award by Fogarty International Center, National Institutes of Health (NIH), USA	2021
3	Prof. Mohammed Mamman	Appointed by NAEC as the IAEA National Counterpart, Trypanosomiasis TC project RAF5087	2022
4	Prof. J. Kabir	Member Ahmadu Bello University Governing Council (2024-2026)	2024 - 2026
		Fellow International Federation of Biosafety Association	2022-2027
		Co-Chair of National Antimicrobial Technical Working Group	2021 – Date
		Member of Board of Trustees Infectious Diseases Society	2024
5	Prof. Y.K.E. Ibrahim	Overall Ahmadu Bello University Grant Fellow of the Year	2024
		Member, Governing Council, Kogi State University, Kabba	2024 - Date
6	Prof. Hussaina J. Makun	Country Representative, International Goat Association	2024
		Steering Committee Member, World Association for the Advancement of Veterinary Parasitology African Network (WAAVP-AN)	2024
7	Prof. I. S. Ndams	Member, National Onchocerciasis Elimination Programme (NOEP)	2019 - Date
		Adviser, Kaduna State Insecticide Resistant Monitoring	2021-Date
8	Dr Aminu Mohammed	Nominated for the Afrique Research Support Hub (ARSH) Program Mentorship-West and Central Africa Cohort, 2025. The program is 12-month mentorship program and includes a face-to-face training workshop from August 25-29, 2025, in Dakar, Senegal. This will	2025 - 2026

		follow with a 12-month mentorship program focused on strengthening your research grant proposal development. Most importantly, there will be an opportunity to compete for seed funding of up to USD 7,500 to support research effort.	
9	Amaya Jobin Habila	Merck Foundation Best African Women Researchers Award	2022
10	Edwige Flore Gougeni	1 st Position, Student Innovation and Research Award	2022
11	Mukhtar Aliyu	3 rd Position, Student Innovation and Research Award	2022

COMMUNITY OUTREACH AND INTERACTIONS

- Workshop and hands-on training on rabies. Training was held on 1-5th April, 2019 with the goal of building strong human capacity at all levels, in order to ensure efficient and reliable human capacity at all levels, for rabies surveillance, prevention and control in Nigeria.
- Phase II was held between 8-12th April, 2019. There was a total of 60 participants from Sabon gari Local Government Area (LGA) consisting of community health workers, animal health staff, and hunters representing all the 11 wards of the LGA. The exercise covered awareness and education on rabies prevention and control; as well as advocacy, general knowledge and skills, surveillance and rabies outbreak response. A total 2,591 dogs and 503 cats were vaccinated against rabies.
- Community engagement on schistosomiasis, parasitological survey to determine prevalence and treatment with praziquantel of positive case in Dumbi, Igabi LGA, Kaduna State
- Establishment of COVID-19 testing centre for NCDC. In addition, ACENTDFB supported Kaduna State Government to establish its testing centre in Yusuf Dantsoho Memorial Hospital Kaduna and trained the health personnels in sustaining COVID-19 testing in the state.
- Technical support to the National Onchocerciasis Elimination Programme (NOEP).

DONATIONS OF EQUIPMENT

A number of organizations have donated equipment to the Centre resulting from partnerships, collaborations and the drive to support its work.

S/N	Equipment	DESCRIPTION	Donor Organization
1	● Biosafety cabinet Class II, ● Biosafety Cabinet Class III, ● Quantitative PCR, ● Vortex Mixer ● Sample processing bench top cabinet	The equipment worth €73,000.00 was provided by the International Atomic Energy Agency through the Nigeria Atomic Energy Commission (NAEC) to the Centre to enhance its COVID-19 analysis capacities.	International Atomic Energy Agency (IAEA)
2	Multiplex Analyzer (Luminex)	The analyzer has capacity to diagnose multiple diseases in one sample	University of Nagasaki, Nagasaki, Japan

CONFERENCES, TRAININGS AND WORKSHOPS

A number of Conferences, Training Programmes and Workshops were organized by the Centre as part of the strategy to promote the generation and exchange of information.

Short-Term Training Workshops

A total of 26 Short-Term Training Workshops were held between 2014 and 2024. These had a total of 631 participants made up of:

- i. 434 National Participants and
- ii. 197 Regional Participants

The following table provides a breakdown of the Shor-term Training Workshops by year and participants:

S/No	Training Workshop	Date	Participants			Nationality
			Male	Female	Total	
	2014					
	Recombinant Protein Theory and Practice	October, 2014	14	18	32	National
	2015					
	Molecular Diagnostics of Parasite Infections	July 2015	23	8	31	Cameroun/Regional
	Molecular Diagnostics of Parasite Infections	September 2015	27	7	34	National
	Molecular Diagnostics of Genotype Using Arms	September 2015	8	2	10	National
	2017					
	Species Specific Diagnosis	September 2017	13	3	16	National
	2018					
	Basic Recombinant DNA Technology	October 2018	9	7	16	National
	Species Specific Diagnosis	November 2018	8	9	17	National

	2019					
	Identification of Trypanosomes by Conventional PCR and qPCR NIMR-ACENTDFB Joint Training	26 th -30 th August 2019	12	5	17	National/NIMR
	CIRDES-ACENTDFB Training on Bioinformatics and Extraction of Trypanosomal DNA	9 th – 13 th September, 2019	13	7	20	CIRDES Bobo-Dioulasso, Burkina Faso /Regional
	Rabies Surveillance and Control Hands-on Training Workshop 1& 2	1 st – 5 th April, 2019 8 th – 12 th April, 2019	10 2	18	120	National
	Workshop on Basic Molecular Diagnostic Techniques for Tropical Diseases, N'djamena	27 th Nov – 6 th Dec., 2019	21	2	23	Université De N'djamena, Chad /Regional
	Workshop on Basic Molecular Diagnostic Techniques for Tropical Diseases, Ngaoundere	9 th - 20 th DECEMBER, 2019	16	6	22	IRAD Wakawa, Ngaoundéré, Cameroon /Regional
	2020					
	ACENTDFB-NIMR From Basic PCR In Trypanosomes To Bioinformatics	19 th – 23 rd October, 2020	8	7	15	National
	Surveys in Research on Neglected Tropical	13 th – 17 th January 2020	16	5	21	National

	Diseases: Project Design, Planning, Sampling and Documentation					
	2021					
	Basic Recombinant DNA Technology Training	19 th – 23 rd April 2021	1	5	6	National
	ACENTDFB- SightSavers Training on Use of SD-Bioline Rapid Kit for Onchocerciasis detection	15 th – 25 th March 2021	9	4	13	National
	2022					
	Hands-on Training on Molecular Biology: Vector Borne Disease in Focus I & II	13 th – 17 th December, 2021 24 th – 28 th Jan 2022	19	11	30	National
	Training Workshop on Parasite Genetics of Neglected Tropical Diseases	9 th – 13 th May 2022	20	3	23	Uganda/Regional Makerere University Uganda
	ACENTDFB_NIM R Workshop on Bioinformatics tools in Identification of Trypanosomes	18 th – 22 nd April 2022	11	6	17	National
	Training Workshop on Molecular Identification of Zoonotic Diseases and Animal Food Security, Daloa	21 st – 25 th March, 2022	18	20	38	Cote d'Ivoire/Regional Jean Lorougnon Guede, Daloa, Cote d' Ivoire

	Bioinformatics Basic to Intermediate Level Hands-on Training Workshop	13 th – 17 th June 2022	14	8	22	National
	2023					
	Basic to Introductory Bioinformatics Training Course	23 rd – 27 th January 2023	16	6	22	MRC, The Gambia/Regional
	2024					
	Rabies Genomic Surveillance	March, 2024	7	11	18	University of Glasgow
	Hands-On Training on Basic Recombinant DNA Technology and Bioinformatics	1 st – 5 th July 2024	17	10	27	National
	Hands-On Training on Basic Recombinant DNA Technology and Bioinformatics	2 nd – 6 th September 2024	6	2	8	National
	Hands-On Training on Basic Recombinant DNA Technology and Bioinformatics	28 th October – 1 st November 2024	10	3	13	National
	Total		438	193	631	18 National/ 7 Regional/1 International

ACENTDFB-MRC Training in the Gambia

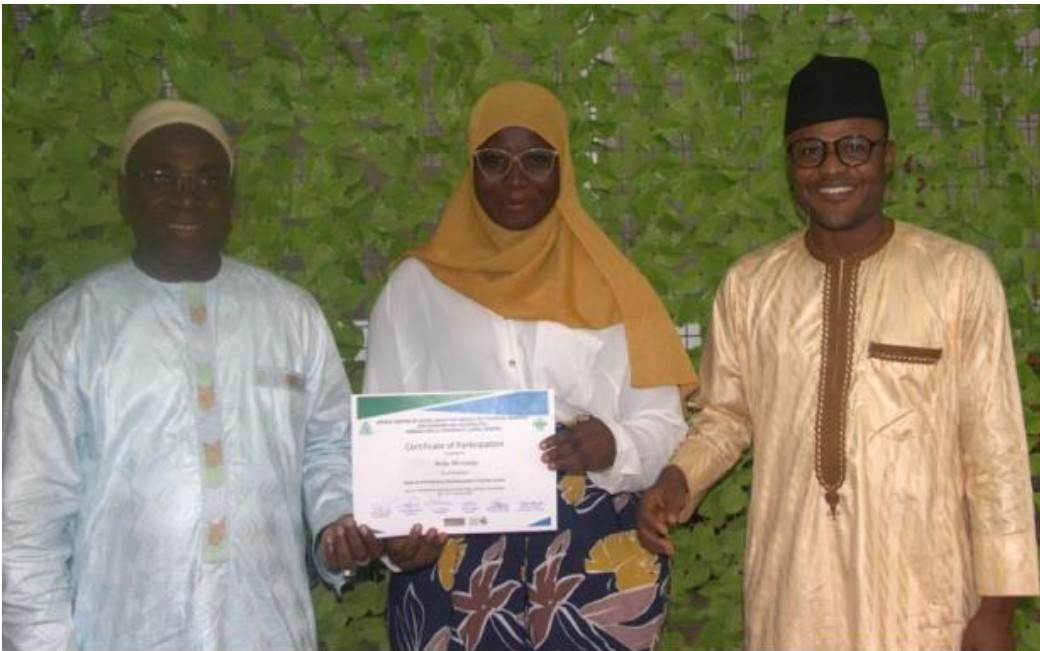
Group Photograph of ACENTDFB Team, MRC The Gambia Team and The Workshop Participants



Picture of all Participants that Attended the Training Workshop on Bioinformatics Jointly organized by ACENTDFB and MRC, The Gambia



During the Lecture Presentation Session by Prof. E. O. Balogun (ACENTDFB)



Certificate Presentation at the end of the Workshop to the Participants

TRAINING WORKSHOP ON SURVEYS IN RESEARCH ON NEGLECTED TROPICAL DISEASES: PROJECT DESIGN, PLANNING, SAMPLING AND DOCUMENTATION





5-DAY TRAINING WORKSHOP JOINTLY ORGANIZED BY ACENTDFB AND NIMR TITLED “FROM BASIC PCR TO BIOINFORMATICS”



ACENTDFB-CBRT JOINT TRAINING WORKSHOP ON BASIC RECOMBINANT DNA TECHNOLOGY



TRAINING ON THE USE OF SD-BIOLINE RAPID KIT FOR ONCHOCERCIASIS DETECTION JOINTLY ORGANIZED BY ACENTDFB AND SIGHTSAVERSNIGERIA



HANDS-ON TRAINING ON MOLECULAR BIOLOGY: VECTOR BORNE DISEASE IN FOCUS (Phase 1)



ACENTDFB Management and Participants



The participants during introduction lecture



During a visit to the largest Insect Museum in West Africa, at IAR, ABU, Zaria



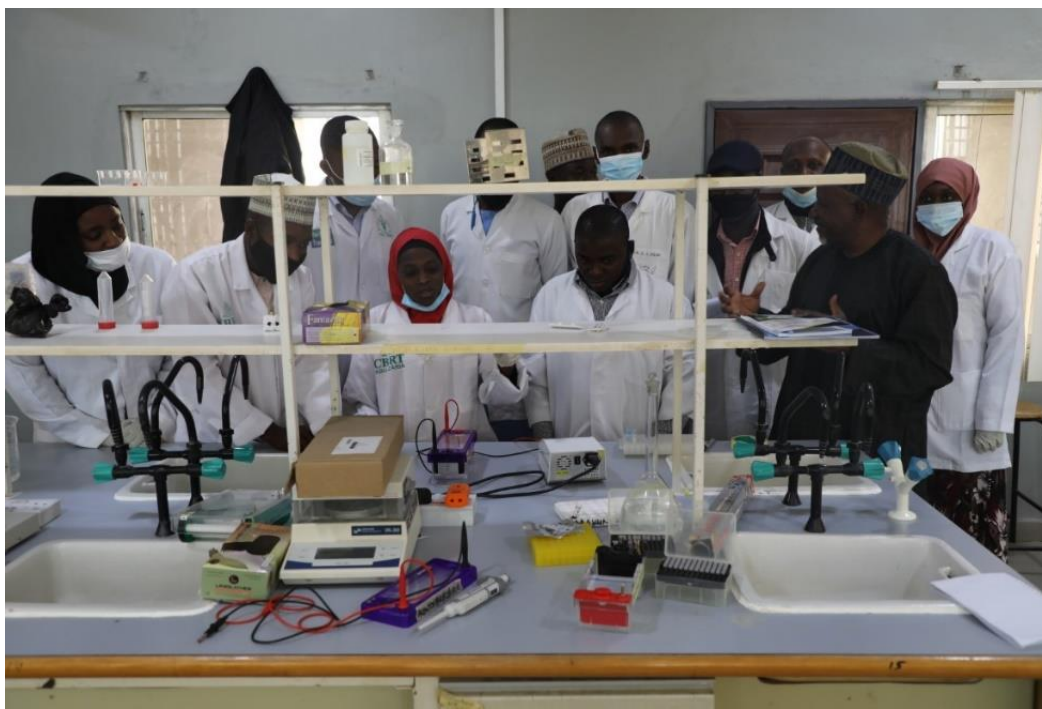
Field collection of insects



During a practical lab training



During a practical lab training



During a practical lab training



HANDS-ON TRAINING ON MOLECULAR BIOLOGY: VECTOR BORNE DISEASE IN FOCUS (PHASE II)



TRAINING WORKSHOP ON MOLECULAR IDENTIFICATION OF ZOONOTIC DISEASES AND ANIMAL FOOD SECURITY AT UNIVERSITÉ JEAN LOROUGNON GUEDE, COTE D'IVOIRE



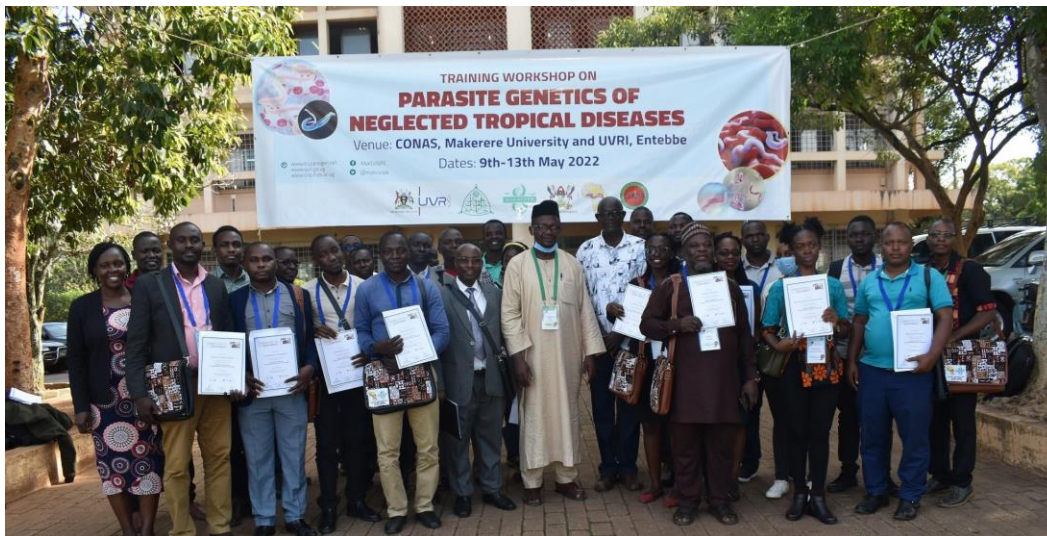
TRAINING WORKSHOP ON MOLECULAR IDENTIFICATION OF ZOONOTIC DISEASES AND ANIMAL FOOD SECURITY AT UNIVERSITÉ JEAN LOROUGNON GUEDE, COTE D'IVOIRE



**BIOINFORMATICS TOOLS IN IDENTIFICATION OF TRYPANOSOMES
AT NIGERIAN INSTITUTE OF MEDICAL RESEARCH, YABA, LAGOS
STATE, NIGERIA**



**BIOINFORMATICS TOOLS IN IDENTIFICATION OF TRYPANOSOMES
AT NIGERIAN INSTITUTE OF MEDICAL RESEARCH, YABA, LAGOS
STATE, NIGERIA**



TRAINING WORKSHOP ON PARASITE GENETICS OF NEGLECTED TROPICAL DISEASES AT MAKERERE UNIVERSITY AND UVRI, ENTEBBE, UGANDA



HANDS-ON TRAINING WORKSHOP ON BIOINFORMATICS: BASIC TO INTERMEDIATE LEVEL AT NITT, ZARIA



HANDS-ON TRAINING WORKSHOP ON BIOINFORMATICS: BASIC TO INTERMEDIATE LEVEL AT NITT, ZARIA

WEBINARS/PUBLIC LECTURES HELD

1. "Expanding the reach of CRISPR-Based Genetic Engineering to African Research Institutes". Guest Speaker: Dr. Bashir Rumah, Postdoctoral Research Fellow at University of Nottingham, UK. Moderator: Prof. Ahmed B. Suleiman, Department of Microbiology, A.B.U. Zaria. Date: Friday 24th May 2024. A webinar in Collaboration with the Centre for Biotechnology Research and Training (CBRT), A.B.U. Zaria.
2. "Investigating Drug Resistance in Parasites: Molecular Tools and Approaches". Guest Speaker: Dr. Marzuq Ungogo, Bioscience Researcher at University of Glasgow, UK. Moderator: Prof. Junaidu Kabir, Department of Veterinary Public Health and Preventive Medicine, A.B.U. Zaria. Date: Thursday 11th July 2024. A webinar in Collaboration with the Centre For Biotechnology Research and Training (CBRT), A.B.U. Zaria.
3. "Responding to victim needs: Who is a victim? Whose responsibility?". Guest Speaker: Prof Sarah Agnela Simons, A distinguished Professor of Criminology & Victimology. Date: Tuesday 11th June 2024. A public lecture in Collaboration with the Department of Sociology, A.B.U. Zaria.

4. “Research and Innovations Intellectual Property and Technology Transfer”. Guest Speakers: Prof. Valentine Ntui (UM6P, Morocco) and Prof. Sani Ibrahim (A.B.U. Zaria), Date: Tuesday 3rd December, 2024. A public lecture in Collaborations with the Directorate of Research and Innovations, A.B.U. Zaria and Africa Centre of Excellence on New Pedagogies in Engineering Education (ACENPEE).
5. “International Accreditation and Career Development for A.B.U. Leadership”. Guest Speakers: Prof. Mukhtar Bello (DAPM, A.B.U. Zaria), Prof Aliyu Salihu (Biochemistry, A.B.U. Zaria) and Prof. E. O. Balogun (IPPTO Coordinator, A.B.U. Zaria), Date: Wednesday 16th October, 2024.

Pitch Presentation

ACENTDFB was the only centre to have two of its pitch submissions accepted for presentation at the Africa Centres of Excellence International Partnerships Workshop/Conference themed “Building Pathways Towards Sustainability through Collaborative Research and Innovation”. Mauritius, 8-10 May, 2024 The titles of the pitch presentations are:

- Molecular Diagnostic Kit for Toxoplasmosis and
- Antimicrobial Nano-reinforced Bacterial Cellulose Hydrogel (BCH) from Agro-residues.

Poster Presentations

ACENTDFB presented five (5) research posters at the ACE@10 Exhibitions, Ghana (7th - 9th April, 2025). The titles of the posters were:

- Development of emulsion to combat infection associated with dog bites.
- Development of a novel PCR-based region-specific diagnostic tool for rabies diagnosis with high-sensitivity, specificity and accuracy.
- Establishment of a system for production of trypanosomes phospholipase A₂ and development of its inhibitors for drug design.
- Development of novel Toxoplasmosis prototype kit (ToxoRap).
- A cost-effective biotechnology-enabled production of bacterial cellulose hydrogel via genetic modification of *E. coli*.

SERVICES PROVIDED

The Centre, keen to ensure that its services are felt by the wider population, provides the following amongst others:

S/N	SERVICE/TITLE	
1	Establishment and commissioning of COVID-19 Testing Centre in the University	A COVID-19 Testing Lab was established in 2020 at the Centre for Biotechnology Research and Training. A total of 3,243 samples were tested from April 2020-o January 2021. One journal article was published by researchers and technical staff involved in the sample analysis
2	Establishment of Kaduna State COVID-19 Testing Facility in Kaduna	Technical advice was provided in the design of the Centre. It also supervised the project and trained the facility personnel on analytical protocols, and good laboratory practice.
3	Sample Analysis	Assisted researchers Sighsavers and MOTISAT (two NGOs in Nigeria) to collect field samples and analysis
4	Provision of bench spaces for foreign researchers	Hosted two researchers- one from Al-Azhar University, Cairo (Dr. Eman A. Alam) and Mr. Reward Muzerengwa of the Biotechnology Development Centre, Harare, Zimbabwe for their bench and field works.
5	Advocacy Campaign:	Carried out enlightenment and capacity training of stake holders involved in NTDs management chain. Two of such advocacies are: • Training of hunters and health workers on rabies, preventive measures and dog handling (170 hunters participated; 2000 dogs vaccinated). • Vaccination of dogs in other parts of Kaduna State and Kano State is in progress. a. Advocacy campaigns, epidemiological surveys, and administration of de-worming drugs to 350 inhabitants was carried out in Igabi LGA, Kaduna State

SUMMARY OF ACHIEVEMENTS

• Key Academic and Research Breakthroughs

S/NO	DESCRIPTION
1.	A 20% sero-prevalence of dengue was established in Adamawa state and a 12% co-infection with malaria; as well as the first report of the detection of serotype 1 of dengue virus (DENV) in humans and mosquitoes.
2.	A sero-prevalence of about 40% of dengue in humans in Cameroon and co-infection with malaria and typhoid fever of varying rates, as well as detection of DENV serotype 4 in humans and mosquitoes.
3.	Detection of 6 species of trypanosomes in the Jebba axis of River Niger including mixed infections. The most prevalent species was <i>Trypanosoma congolense</i> ; thus, study area may be endemic for tryps and may serve as nidus for future spread and outbreaks.
4.	Detection, sequencing and demonstration of virulent rabies virus from brain tissues of in apparently healthy carrier dogs slaughtered for human consumption.
5.	Development of novel PCR primers based on the genome sequences of circulating rabies virus strains, for more effective surveillance of rabies in dogs in Nigeria with high correlation with direct fluorescent antibody test (DFAT) which is the gold standard for post-mortem rabies diagnosis in dogs.
6.	A report of endemic urinary schistosomiasis among adult males in a community in Maiduguri
7.	The first report of <i>G. orientalis</i> isolate in Nigeria producing BCH
8.	Successful cloning of bcs genes into <i>E. coli</i> and expression of BCH protein by <i>E. coli</i> harboring the cloned gene

RESEARCH BREAKTHROUGHS AND INNOVATION AT ACENTDFB

ACENTDFB purpose driven research activities have continued to yield positive outputs, with a total of thirteen (13) Patents, eleven (11) of these are German while two (2) are Nigerian. Information on some of these breakthroughs and innovative research outcomes are:

GERMAN PATENTS (11)

1. Development of molecular detection and genotyping method for *Toxoplasma gondii*

Overview:

Toxoplasma gondii is the parasite that causes the disease known as toxoplasmosis and it is prevalent worldwide. The current method for diagnosis is based on Enzyme Linked Immunosorbent Assay

(ELISA). The ELISA method is cumbersome, expensive, and it cannot give information about the genotype of the parasite. A new diagnostic method that can be used for accurate diagnosis of the disease and to identify the genotype of the *T. gondii* parasite into 3 clonal lineage and non-clonal genotype was developed.

Problem Identification:

Toxoplasmosis is a water-borne and a food-borne zoonotic disease of public health important with one-third global prevalence. Infection in pregnant woman and immunocompromised person are fatal and can cause congenital and ocular disease with severity linked to genotype of *T. gondii* parasite infection. Therefore, for treatment and management of toxoplasmosis early detection and accurate diagnosis to genotypic level is vital. However, currently there is no singular diagnostic tool suitable for clinically setting. Serological testing is not definitive and current PCR method are associated with problems. Thus, the need for a singular diagnostic tool.

Methodology/Production Process:

Oocysts of *T. gondii* were harvested from cat feces samples and the genomic DNA was extracted using a conventional method. Bioinformatic tools were used to analyse the genomic DNA sequences of *T. gondii* from which appropriate primers were designed based on criteria that we set for obtaining suitable primers for a nested PCR analysis. In addition, suitable restriction enzymes were selected based on the need to use a single restriction enzyme step.

Outcome/Impact:

The method described herein has been demonstrated to be capable of detecting and genotyping of *T. gondii* in resource limited settings/lab. This novel method is highly sensitive and specific, requiring minute DNA concentration, and very rapid. A patent for this invention and a trademark registration as ToxoRap has been obtained (Patent Reg. No: NG/P/2023/57). ToxoRap has clinical and environmental applications with an estimated annual sale of \$8 million/year if a manufacturing plant for ToxoRap is established

Inventors: Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD) and Mr. Lamin B.S. Dibba (BSc, MSc)

2. Production of Antimicrobial Nano-reinforced Bacterial Cellulose Hydrogel (BCH) from Agro Residues and Application in Wound Healing

Overview:

Bacteria cellulose hydrogel (BCH) produced mostly by *Gluconacetobacter xylinus* is one of the nano cellulose-based biomaterials under investigation for use as a matrix for slow drug release formulation in wound healing. The matrix nature of BCH and the ability to modify its inter-molecular pores has endeared it as a suitable material for embedding drug molecules, and scaffolding in wound healing and tissue regeneration. However, BCH production by *G. xylinus* is slow, and is characterized by low yield and high cost. We are able to isolate and characterize a new species of BCH producer from agro wastes, clone the bcs genes into *E. coli*, and optimize BCH production using pineapple as sole carbon source in growth media. which gave much higher BCH yields.

Problem Identification:

This organism (*G. xylinus*) can be isolated from local agro-residues, which are largely wasting. The production of this biomaterial (BCH) from agro residues, which are abundant in the country and wasting, serves not only as alternative sources for BCH production but can also be optimized to produce higher quantities using recombinant DNA technology. The objectives of the research are to isolate bacterial cellulose genes from *G. xylinus* strains obtained from Nigerian based agro-waste, clone the genes and express them in *E. coli* BL2 (DE3), study the feasibility of utilizing several bio-wastes composition as growth media for *Gluconacetobacter* sp, optimize the process parameters for the scale up of cellulose production in making bio-nanocomposite, characterize and quantify the bacterial cellulose produced by the cloned *E. coli*.

Methodology/Production Process

To execute the project activities, four postgraduate students (one PhD and three MSc) were recruited and assigned different aspects of the project. A new strain of *Glucoacenetobacter orientalis* BCH

producer was isolated, and the bcs genes responsible for the BCH production in the isolated *G. orientalis* identified, sequenced and successfully cloned into *E. coli*. Four agro residues (banana, cassava, pineapple and sweet potatoes peels) were evaluated as sole carbon sources for BCH production by the GM *E. coli* (DES) pLysS using Fourier Transform Infra-red Spectroscopy, X-ray diffraction, Scanning Electron Microscopy and Thermogravimetric analysis. The *G. orientalis* strain which was isolated in this study, was fully characterized and the gene sequence deposited in the Gene data bank. BCH production conditions by the stable transformed *E. coli* was optimized.

Outcome/Impact

BCH production in the GM *E. coli* was much higher than previous yields by about 300%. The outcome of the research work has been patented in Germany (Patent Nr: 20 2024 102 959). The four students had completed their research works and graduated. We are currently seeking collaboration with venture partners towards scaling up of the research work and subsequent commercialization.

 Bundesrepublik Deutschland 

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2024 102 959

Bezeichnung:

Ein System zur Herstellung von bakteriellem Cellulosehydrogel (BCH) aus
Agrarrückständen unter Verwendung von Gluconacetobacter Orientalis

IPC:

C12P 19/04

InhaberInhaberin:

Balogun, Emmanuel Oluwadare, Zaria, NG
Ibrahim, Yakubu Kokori Enevehe, Zaria, NG
Joel, Lockta, Zaria, NG
Luka, Barde Yelwa, Gashua, Yobe State, NG
Mahmud, Sa'adly Halima, Zaria, NG
Mohammed, Rabi Bukar, Zaria, NG
Mohammed, Tahir Turaki, Zaria, NG
Olabode, Samuel Charles, Zaria, NG
Sallau, Abdullahi Balarabe, Zaria, NG
Shuaibu, Mohammed Nasiru, Zaria, NG
Waziri, Ibrahim Zubairu, Zaria, NG

Tag der Anmeldung:

05.06.2024

Tag der Eintragung:

28.06.2024

Die Präsidentin des Deutschen Patent- und Markenamts



Eva Schewior

München, 28.06.2024



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Den aktuellen Rechtsstand und Schutzumfang entnehmen Sie bitte dem DPMA-Regulator unter www.dpma.de.

3. Discovery of metalloproteinase in the venom of West African Saw scaled carpet viper as a therapeutic peptide for African trypanosomiasis

Overview:

We found a novel therapeutic peptide in snake venom that could be developed into drug for curbing the menace of African trypanosomiasis (AT). African trypanosomiasis is a disease of humans and animals, caused by blood-dwelling parasites known as African trypanosomes, and mostly transmitted by tsetse flies. The disease kills over 4,000 Africans annually and leads to loss of millions of cattle and other livestock animals worth about \$5 billion in Africa every year.

Problem Identification:

There is no vaccine for prevention of African trypanosomiasis (AT), therefore, chemotherapy is the only option for management and control of the diseases. There are presently only 5 drugs (Suramin, Pentamidine, Eflornithine, Melarsoprol, and Nifurtimox) in the market for treatment of AT, unfortunately all the drugs are problematic due to toxicity, treatment failure because of drug resistance, and difficulty in their use- only highly skilled doctors can administer it to humans. These limitations necessitate the need for continued search for new chemotherapy options. In this project, we decided to investigate previously unexplored sources of therapeutic agents with mechanisms of action different from the current drugs, therefore we investigated the snake venom. The venom of certain snakes has been reported to have anticancer activity.

Methodology/Production Process:

Crude venom was collected from a viper species and tested *in vitro* on the bloodstream form of *Trypanosoma brucei* and *T. congolense*. This was followed by a sequential anti-trypanosomal assay-guided purification of the venom using ethanol precipitation, distillation, and ion exchange (IEX) chromatography to obtain the active trypanocidal component. The purified anti-*Trypanosoma* active principle was subjected to in-gel trypsin digestion and 2D RP HPLC-MS/MS to identify the protein.

Outcome/Impact:

The bioactive anti-trypanosomal component of the venom from viper snake was successfully isolated. The purified anti-*Trypanosoma* agent was confirmed to be a protein with estimated molecular weight of 52-kDa on SDS-PAGE. The sequencing results revealed that the anti-*Trypanosoma* factor is a proteinase. This is the first successful attempt to identify the specific component of the venom that can kill parasites. The proteinase was tested on animals that were infected with trypanosome parasites- high efficiency of treatment was recorded with no death in the test animals. The isolated protein is not toxic and completely different from existing drugs used for the treatment of the disease. A patent for this breakthrough has been obtained and trade mark registered as TrypsTheraPep. Its patent registration number in Nigeria is NG/P/2023/55.

Inventors: Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), Mr. Ilu Ameh (BSc, MSc), Dr. Mathias Ahii Chia (BSc, MSc, PhD), and Professor Mohammed N. Shuaibu (BSc, MSc, PhD).

4. Isolation, characterization and establishment of pharmacokinetic profiles of antimicrobial peptides from a Nigerian frog

Overview

Antimicrobial peptides, commonly known as AMPs, are a diverse class of naturally occurring compounds serving as the first line of natural defense in many living organisms. They possess enormous medical potential for eradicating dangerous germs. Several amphibian-derived AMPs with significant antibacterial activity against bacteria, yeast, protozoa, fungus, and viruses and some potential for cancer therapy have been found. The limited availability of natural AMPs, the prohibitive cost of synthesizing longer amino acid sequences, challenges with natural AMP folding, the short half-lives of natural AMPs as a result of protease degradation, systemic toxicity, and delivery challenges limit the therapeutic potential of natural AMPs. In this research, AMPs from a Nigerian frog were obtained, sequenced and their ADMET properties determined. Two novel AMPs were in-silico designed. These AMPs exhibited pronounced antimicrobial properties.

Problem Identification

The rapid increase in antimicrobial resistance against conventional antimicrobials, the emergence of multidrug-resistant bacteria and the slow development of novel antimicrobial classes, have necessitated an urgent need to discover alternative classes of antimicrobial compounds. Antimicrobial peptides, commonly known as AMPs, are a diverse class of naturally occurring compounds that possess enormous potential for eradicating dangerous germs. They have the potential to cure superbug-caused infections effectively. Urgently required are short cationic AMPs that are protease-tolerant and less toxic to humans to overcome these limitations and enable the therapeutic application of AMPs. Some frogs are known to possess such compounds.

Methodology/Production Process

Exudates from the skins of the frogs were purified and analyzed using MALDI TOF/TOF MS. The sequences of the peaks were determined using Mascot Peptide Mass Fingerprint. In addition, De novo design of AMPs was carried out while validation of their properties such as peptide activity, peptide length, amino acid frequency, charge, hydrophobicity and the structure profile were determined. The generated sequences were modeled using PEP-FOLD 3.5. The 3D structures were validated using PROCHECK of SAVES v6.0. Molecular docking studies of the AMPs and the receptors were carried out using HPEPDOCK. *In silico* physicochemical properties and ADMET studies were carried out using ProtParam. Two new AMPs were designed, and their functional 3D structures modeled and validated.

Outcome/Impact

Novel AMPs from the frog which had profound antibacterial activity against various multidrug resistant bacteria were revealed by MALDI TOF/TOF MS. Two new in-silico derived AMPs (ama1 and ama2) with their 3D structures, physicochemical parameters and toxicity profiles which exhibited better inhibitory activities against multidrug-resistant bacteria were also designed. Through computational analysis, it was predicted that these two AMPs could have potent antibacterial activity on both multidrug-resistant MRSA and CRPA without causing toxicity. In addition to their predicted

strong and rapid antibacterial activity, these two cationic AMPs have low resistance potential, making them interesting alternatives to conventional antibiotics. Formulation of these AMPs into topical products and their clinical evaluation and screening of other native frogs are also ongoing, for which additional funding is being sought from the National Research Fund of Nigeria. One PhD student had been produced from the work. This will significantly improve therapeutic management of a number of

5. A system for the development of treatment of *Diabetes mellitus* from ethanolic extract of *Anogeissus leiocarpus*.

Overview:

According to the World Health Organization, *Diabetes mellitus* (DM) is the most prevalent non-communicable disease as it has a global spread of over 425 million people. It is predicted that DM might become the 7th leading cause of death in 2030. Although currently used anti-diabetic are effective, the drugs come with undesirable side effects. From this background, we were motivated to explore the possibility of discovery of new anti-diabetic drug candidates. We investigated several African medicinal plants and found that ethanol extract of the plant *Anogeissus leiocarpus* (known as African Birch Tree) possess significant anti-diabetic activity.

Problem Identification:

Over 425 million people have diabetes mellitus. The disease is associated with millions of deaths annually. Presently used anti-diabetic have serious side effects ranging from weight gain to severe pancreatitis. In addition, the high cost of the drugs makes it inaccessible by patients in most African countries and other low-medium income countries.

Methodology/Production Process:

Stem bark of African Birch Tree, *Anogeissus leiocarpus* was harvested from Zaria and environs, Nigeria. After pulverization, the powdered material was extracted with ethanol by cold extraction. The different doses of the extract were used for treatment of alloxan induced diabetes of rats. Rats in the negative control and positive groups were treated with normal saline and standard drug. After treatments, random blood glucose in all animals were monitored.

Outcome/Impact:

The results revealed that ethanol extract of the African Birch Tree has significant anti-diabetic activity that is comparable to the potency of the standard drug used as positive control. In addition, it was demonstrated that the plant extract is safe, with no toxicity recorded. Importantly, the active anti-diabetic compounds were isolated and characterized. Partnership is currently being sought with pharmaceutical industries to develop these compounds into anti-diabetic drugs. It is patented in Germany with patent number 20 2023 106 836.

— Bundesrepublik Deutschland —

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2023 106 836

Bezeichnung:

Ein System zur Entwicklung von ethanolischem Extrakt aus *Anogeissus*
Leiocarpus und Behandlung von Diabetes mellitus

IPC:

A61K 36/185

Inhaber/Inhaberin:

Adamu, Sani, Zaria, NG
Anefu, Emmanuel Owolicho, Sabon-Gari, NG
Balogun, Emmanuel Oluwadare, Zaria, NG
Esievo, King Akpofure Nelson, Zaria, NG

Tag der Anmeldung:

20.11.2023

Tag der Eintragung:

14.12.2023

Die Präsidentin des Deutschen Patent- und Markenamts

Eva Schewior

Eva Schewior
München, 14.12.2023



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6. A system for detecting the healing activities of the ethanolic extract of *Anogeissus leiocarpus* on surgically created skin wounds

Overview:

According to the World health Organisation, *diabetes mellitus* (DM) is the most prevalent noncommunicable disease as it has a global spread of over 425 million people. It is predicted that DM might become the 7th leading cause of death in 2030. Diabetic foot ulceration (DFU) is the most devastating complication of diabetes that is associated with infection, amputation, and death, and is affecting over 6.5% of diabetes patients and this number is increasing. The management of DFU is highly complicated requiring treatment options ranging from antibiotics to tissue grafting in addition to consistent consumption of anti-diabetic drugs, because different factors play major roles in different stages. Our aim was to find a remedy that will be both anti-diabetic and effective in managing the associated ulcer wounds. Several African medicinal plants were investigated. Ethanol extract of the plant *Anogeissus leiocarpus* (known as African Birch Tree) was found to possess wound healing activity in surgically-induced wounds in diabetic animals.

Problem Identification:

Diabetic foot ulcer (DFU) has been well documented to be the most frequent complication that occurs in approximately 6.3% of diabetes patients worldwide. The high incidence of DFU and the associated mortality and morbidity are the most common reasons for hospitalization of diabetes patients, and requiring very complicated management procedures, which are often not very effective. For instance, in the United States alone, over 6.7 million ambulatory cares for DFU was required between 2007 and 2013. The situation in Africa and other developing country is even more worrisome due to lack of reliable data.

Methodology/Production Process:

Four groups of 3 dogs (non-diabetic surgically-wounded (NDW), diabetic surgically-wounded-insulin-treated (DWI), diabetic surgically-wounded-extract-treated (DWE) and diabetic surgically-wounded-untreated (DWU)) were used. Twenty-one days post

induction and confirmation of diabetes, humane surgical full-thickness skin excision wounds, 2 cm by 2 cm diameter were induced, immediately followed with insulin and extract treatments for the next 21 days post induction of skin wounds. All dogs were observed for characteristics of diabetes, gross clinical wound characteristics, histopathological evaluation of wound site biopsies for progressive collagenation and epithelization. Data were expressed as Mean $\pm$ SEM and subjected to two-way ANOVA with Dunnett's test using GraphPad Prism 8 statistical package

Outcome/Impact:

All presentations of type 1 *Diabetes mellitus* were reproducible including pancytopenia, in these alloxan-induced diabetic dogs. Thrombocytopathies included thrombocytosis in NDW and DWE but thrombocytopenic counts occurred in the DWI and DWU dogs. Gross clinical wound characteristics of DWE were different when compared with untreated group but similar with non-diabetic group. Extract treatment increased fibrous connective tissues, with progressive collagenation and epithelialization almost identical with tissues of normal controls. As this is the first successful attempt to obtain an effective remedy for skin wounds in ulcer patients, we have obtained patent for this invention and are seeking partnership for developing the plant extract into drug. Its patent number in Germany is 20 2023 106 837.

 Bundesrepublik Deutschland 

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2023 106 837

Bezeichnung:
Ein System zum Nachweis der Heilaktivitäten des ethanolischen Extrakts aus
Anogeissus leiocarpus auf chirurgisch hergestellten Hautwunden

IPC:
A61K 36/185

Inhabentin:
Balogun, Emmanuel Oluwadare, Zaria, NG
Esievo, King Akpofure Nelson, Zaria, NG
Num-Adom, Sabina Mbafan, Makurdi, NG

Tag der Anmeldung:
20.11.2023

Tag der Eintragung:
19.12.2023

Die Präsidentin des Deutschen Patent- und Markenamts



Eva Schewior
München, 19.12.2023



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7. DNA and Protein Subunit Vaccines Development against African Animal Trypanosomiasis

Overview

Africa Human Trypanosomiasis b(HAT) continues to exact detrimental effect on the rural population in African countries, particularly those below the equator. Measures to address this

negative impact have largely been curative – administration of drugs. There is currently no vaccine to prevent its occurrence. This project is geared to design and develop effective vaccines against the infection using recombinant DNA technology. Three vaccine candidates developed using subunits of the cell (cellwall and proteins) showed promising results in animals. Optimization of the vaccines is currently ongoing.

Problem Identification:

Trypanosomiasis is a vector-borne disease transmitted to human and animals by the tsetse fly and is endemic in Nigeria. If left untreated, the disease is fatal. Annually the trypanosomiasis kills thousands of Africans and results in the loss of animals worth estimated at USD\$5 billion due to lack of effective treatment and field applicable vaccine. There is yet no effective vaccine that is available for prevention of the disease. Our research focuses on developing a vaccine that can be used to protect the numerous animals, farmers that are at risk. The study is targeted at genes encoding essential surface and non-variable proteins.

Methodology/Production Process

Molecular tools involving PCR and gene cloning were used to produce DNA vaccine candidate carrying the target genes encoding essential surface and non-variable proteins of African trypanosomes, on a pVAX1 plasmid backbone. The plasmid constructs representing the DNA vaccine candidate was used to vaccinate animal models and then assayed for immunological responses. Results showed that the DNA vaccine construct was able to induce immune responses. The animals were then challenged with the parasites and response monitored. Pharmacokinetic profiles of the vaccine candidates as well various toxicity parameters were determined.

Outcome/Impact

We documented that the vaccine candidates are about 45% effective at elongating the survival of the infected animals. This observation is encouraging and we are in the process of optimization for better efficiency of the invention. Further studies, in mice, are now being conducted with a view to refine the vaccine candidates – this aspect

is being funded by the National Research Fund of Nigeria. We have graduated three PhD students that worked on the research and three others (MSc students) are to be recruited into the research team. These candidate vaccines when fully developed into product will contribute significantly to solving one of the major health and agricultural/economic problems of our country. Two of the three PhD students involved in this vaccine project won international recognition- Gouegni Flore Edwige won Student Innovation Research Award (SIRA) at the ACE Impact Regional Conference, in the Gambia in 2022 while Habila, Amaya Jobin won the Merck Foundation Best African Women researchers Award in 2022.

- 8. Title of Invention:** A system for the identification of ethyl 2-
 {[2-butyl-4-oxo-3-({4-[2 (2H-1,2,3,4-tetrazol-5-
 yl)phenyl]phenyl)methyl)-3H,4H,5H imidazo[4,5-c]pyridine-5
 yl)methyl}benzoate as a potent inhibitor of phospholipase A2
 (PLA2) Ein System zur Identifizierung von Ethyl 2-
 {[2-butyl-4-oxo-3-({4-[2-(2H-1,2,3,4-tetrazol 5-yl)phenyl]phenyl)methyl)-
 3H,4H,5H imidazo[4,5-c]pyridin-5-yl)methyl}benzoate als
 potenter Inhibitor von Phospholipase A2 (PLA2)
Reg. No.: 20 2024 102 911

Inventors: Dr. Oluwafemi Abiodun Adepoju (BSc, MSc, MSc),
 Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), and
 Professor Geoffrey Chang (BSc, MSc, PhD)



- 9. Title of Invention:** A system for the identification of 6-(3-{[3-(4 fluorophenyl)propyl] (methyl)amino}propanoyl)-2,3,4,5,6,7-hexahydro-1,3 benzoxazole-2-one as a potent phospholipase A2 activator Ein System zur Identifizierung von 6-(3-{[3-(4 fluorophenyl)propyl](methyl)amino}propanoyl)-2,3,4,5,6,7-hexahydro-1,3-benzoxazol 2-one als potenter von Phospholipase A2 -Aktivator
- Reg. No.:** 20 2024 102 915

Inventors: Dr. Oluwafemi Abiodun Adepoju (BSc, MSc, MSc), Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), and Professor Geoffrey Chang (BSc, MSc, PhD)

 Bundesrepublik Deutschland 

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2024 102 915

Bezeichnung:

Ein System zur Identifizierung von 6-(3-([3-(4-fluorphenyl)propyl]
(methylamino)propanoyl)-2,3,4,5,6,7-hexahydro-1,3-benzoxazol-2-on als
Potenter Phospholipase A2 -Aktivator

IPC:

C12Q 1/44

Inhaber/inhaberin:

Adepoju, Oluwafemi Abiodun, Zaria, NG
Balogun, Emmanuel Oluwadare, Zaria, NG
Chang, Geoffrey, San Diego, CA, US

Tag der Anmeldung:

04.06.2024

Tag der Eintragung:

28.06.2024

Die Präsidentin des Deutschen Patent- und Markenamts



Eva Schewior

München, 28.06.2024



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Den aktuellen Rechtsstand und Schutzzumfang entnehmen Sie bitte dem DPMAregister unter www.dpma.de.

10. Title of Invention: A system for the identification of 4-{3-[(2H-1,3-benzodioxol-5-ylmethyl)amino]-8-thia-4,6-diazatricyclo[7.4.0.0^{2,7}]trideca-1(9),2(7),3,5-tetraene-5-yl}benzene-1-sulfonic acid as an inhibitor of phospholipase A2 (PLA2) Ein System zur Identifizierung von 4-{3-[(2-chloro-3-methoxyphenyl)methyl]amino}-8-thia-4,6-diazatricyclo[7.4.0.0^{2,7}]trideca-1(9),2(7),3,5-tetraen-5-yl}benzoesäure als Inhibitor der Phospholipase A2 (PLA2)
Reg. No.: 20 2024 102 994

Inventors: Dr. Oluwafemi Abiodun Adepoju (BSc, MSc, MSc), Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), and Professor Geoffrey Chang (BSc, MSc, PhD)

— Bundesrepublik Deutschland —

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2024 102 994

Bezeichnung:

Ein System zur Identifizierung von 2-methylpyridin-3-yl-4-ethoxy-3-{1-methyl-7-oxo-3-propyl-1h,6h,7h-pyrazolo[4,3-d]pyrimidin-5-yl}benzol-1-sulfonat als potenter Phospholipase A2 -Inhibitor

IPC:

C12M 1/40

Inhaberin/Inhaber:

Adepoju, Oluwafemi Abiodun, Zaria, NG
Balogun, Emmanuel Oluwadare, Zaria, NG
Chang, Geoffrey, San Diego, CA, US

Tag der Anmeldung:

06.06.2024

Tag der Eintragung:

27.06.2024

Die Präsidentin des Deutschen Patent- und Markenamts

Eva Schewior
Eva Schewior



München, 27.06.2024

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Den aktuellen Rechtsstand und Schutzumfang entnehmen Sie bitte dem DPMAregister unter www.dpma.de.

11. Title of Invention: A system for the identification of 4-{3-[(2H-1,3-benzodioxol-5-ylmethyl)amino]-8-thia-4,6-diazatricyclo[7.4.0.0[^]{2,7}]trideca-1(9),2(7),3,5-tetraen-5-yl}benzoic acid as an inhibitor of phospholipase A2 (PLA2) Ein System zur Identifizierung von 4-{3-[(2H-1,3-benzodioxol-5-ylmethyl)amino]-8-thia 4,6-diazatricyclo[7.4.0.0[^]{2,7}]trideca-1(9),2(7),3,5-tetraen-5-yl}benzoesäure als Inhibitor der Phospholipase A2 (PLA2)

Reg. No.: 20 2024 102 9018

Inventors: Dr. Oluwafemi Abiodun Adepoju (BSc, MSc, MSc), Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), and Professor Geoffrey Chang (BSc, MSc, PhD)

— Bundesrepublik Deutschland —

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2024 102 918

Bezeichnung:

Ein System zur Identifizierung von 4-{3-[(2-chlor-3-methoxyphenyl)methyl]amino}-8-thia-4,6-diazatricyclo[7.4.0.0[^]{2,7}]trideca-1(9),2(7),3,5-tetraen-5-yl}benzol-1-sulfonsäure als potenter Phospholipase A2 - Inhibitor

IPC:

G16B 35/00

InhaberInhaberin:

Adepoju, Oluwafemi Abiodun, Zaria, NG
Balogun, Emmanuel Oluwadare, Zaria, NG
Chang, Geoffrey, San Diego, CA, US

Tag der Anmeldung:

04.06.2024

Tag der Eintragung:

14.06.2024

Die Präsidentin des Deutschen Patent- und Markenamts

Eva Schewior
Eva Schewior

München, 14.06.2024



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NIGERIAN PATENTS (2)**8. Production of soluble *Trypanosoma brucei gambiense* phospholipase A₂****Overview:**

The enzyme Phospholipase A₂ (PLA₂) has great commercial values as it has many industrial applications ranging from pharmaceuticals, foods, detergents, to biodiesel production. The presently commercially available PLA₂s were prepared from toxins such as snake and bee venoms but their activity is very low and they are costly. To obtain PLA₂ with good safety and higher activity, we investigated the PLA₂ of African trypanosomes and found it to be much better than those from venoms in terms of activity and safety. For the first time, we produced PLA₂ from trypanosomes in soluble form and have established a system for its industry-scalable production in pure and highly active form.

Problem Identification:

Although there are reports confirming TbgPLA₂ as a potential drug target, the production of soluble and active TbgPLA₂ is challenging and has been a setback to developing therapeutics targeting this enzyme. Production of soluble and active TbgPLA₂ is an important step in drug discovery for African trypanosomiasis, and for solving the 3D structure of the protein. This work will open new possibilities for research in developing interventions for sleeping sickness disease

Methodology/Production Process:

Bioinformatics and molecular biology approaches were used to develop a strategy to produce soluble and active TbgPLA₂ for the purpose of discovering new therapeutics and biologics (drugs and nanobodies). We designed different constructs of the TbgPLA₂ gene and expressed them in *E. coli* and *Pichia pastoris*. Attempts to express the full-length protein in *Escherichia coli* led to its deposition in the bacteria's inclusion bodies. Protein bands at 58kDa (full-length TbgPLA₂) and 39 kDa (truncated TbgPLA₂) were detected by SDS PAGE and anti-his western blot from the purified inclusion bodies sample. We established the optimum buffering condition for refolding the protein (Tris 55 mM, NaCl 21 mM, KCl 0.88 mM, pH 8.2). Using *E. coli* expression system, we successfully

expressed and purified active full-length TbgPLA2 from the membrane fraction of *E. coli*. Since it is more convenient to have the protein in the soluble fraction, we used bioinformatics tools to predict the 3D structure, topology and the position of the signal peptide and transmembrane helices of the protein. Four (4) potent Phospholipase A2 inhibitors have been patented in Germany (Patent Nr: 20 2024 102 904; 20 2024 102 911; 20 2024 102 959; and 20 2024 102 994) while one (1) Phospholipase A2 activator has also been registered (patent nr 20 2024 102 915).

Outcome/Impact:

The first method for small-scale and industrial-scale production of soluble phospholipase A2 (PLA2) of any organism of the genus *Trypanosoma* was developed. Details of the stepwise production of the soluble enzyme from *Trypanosoma brucei gambiense* was clearly demonstrated. The enzyme (PLA2) is a validated drug target for development of new anti-*Trypanosoma* drug. Its patent number in Germany is : In addition to its use as a target for drug development for trypanosomiasis, some industrial applications include its use as a degumming and emulsifying agent in the production of detergents and biodiesel. Most importantly, the high specific activity of the PLA2 makes it of great commercial value when launched.

Reg. No.: NG/P/2023/55

Inventors: Dr. Oluwafemi Abiodun Adepoju (BSc, MSc, MSc), Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD), and Professor Geoffrey Chang (BSc, MSc, PhD)

9. Discovery of a tricyclic lactone dodoneine derivative and its application for treatment of infectious diseases**Overview:**

African trypanosomiasis (AT) is a disease of humans and animals, caused by blood-dwelling parasites known as African trypanosomes, and mostly transmitted by tsetse flies. The disease kills over 4,000 Africans annually and leads to loss of millions of cattle and other livestock animals worth about \$5 billion in Africa every year. In our efforts to find new therapeutic agents for AT, we investigated a Nigerian medicinal plant (NMP) and confirmed that the extract killed trypanosomes. Therefore, we proceeded to isolate and identified the

active anti-*Trypanosoma* compound in the plant. The medicinal compound was code-named HEDnone and a patent for it was already obtained. To accelerate commercialization, the trade name Dodotrypcide has been approved for this invention.

Problem Identification:

There is no vaccine for prevention of African trypanosomiasis, therefore, chemotherapy is the only option for management and control of the diseases. There are presently only 5 drugs (Suramin, Pentamidine, Eflornithine, Melarsoprol, and Nifurtimox) in the market for treatment of AT, unfortunately all the drugs are problematic due to toxicity, treatment failure because of drug resistance, and difficulty in their use- only highly skilled doctors can administer it to humans. These limitations necessitate the need for continued search for new chemotherapy options. In this project, we investigated a Nigerian medicinal plant, which has been empirically documented to possess anti-parasitic activities, for its potential to become a source of new drug for African trypanosomiasis. Our aim was to obtain therapeutic agents with mechanisms of action different from the current drugs.

Methodology/Production Process:

Fresh leaves and stems of the NMP was obtained from five locations in Nigeria. The crude extracts were prepared by cold maceration using methanol. In vitro anti-trypanosomal screening of the extracts was carried out in 96 well microtiter plates at final concentrations of 0.8, 0.4, 0.2, 0.1 and 0.05 mg/mL. Phytoconstituents were evaluated using standard procedures. Bioassay guided isolation of the active compound was carried out by repeated silica gel column chromatography monitored by TLC. One- and two-dimensional NMR were used for structural elucidation of the compound. it has patent registration number NG/P/2023/54.

Outcome/Impact:

The results of this study showed that the leaves and stems of NMP had activity against *Trypanosoma brucei brucei* with $IC_{50} = 0.30$ mg/mL. Partition extraction of the methanol extract of the NMP leaves showed n-butanol fraction to contain the anti-*Trypanosoma* principle with $IC_{50} = 0.84$ mg/mL. Bioassay guided fractionation of

n-butanol fraction and subsequent purification of the resulting bioactive compound led to the isolation of the active compound identified as HEDnone with in vitro anti-trypanosomal activity against *T. b. brucei* IC₅₀ = 0.26 mg/ mL. This is the first successful attempt to isolate HEDnone from natural source and importantly, the first time to ascribe any antimicrobial function to it. We have demonstrated that HEDnone is safe in animals, there was no detected toxicity observed in animals administered HEDnone. Furthermore, HEDnone was effective at reducing parasite load in animals treated with HEDnone. We are currently seeking partnership to conduct clinical trials with HEDnone and its development into an anti-Trypanosoma drug. The estimated annual market value of HEDnone is \$15 million annually.

Reg. No.: NG/P/2023/54

Inventors: Professor Emmanuel Oluwadare Balogun (BSc, MSc, PhD) and Mr. John Wassagwa (BSc, MSc)

ENHANCING TEACHING, LEARNING AND RESEARCH FACILITIES

- i. The Administrative Building which houses staff offices, classrooms and forensic laboratories was constructed
- ii. **Construction of Vehicle Park and Student Hotspot, Installation of Solar Power Facility and CCTV**

A vehicle park that accommodates ten (10) cars was constructed. The roofing of the vehicle park is made up of solar panels. As a result, the Centre now has 24 hours electricity power supply; thus enhancing research activities. In addition, security is strengthened with the provision and installation of CCTV. A student's host spot was also constructed.

iii. Equipping of Forensic Laboratories

The Forensic Laboratories of the Centre which are of state of art design, are equipped with modern research and teaching instruments such as Ballistic Comparison Microscope, Fingerprint powder station, Automated Nucleic Acid extraction Instrument, Epi-fluorescence Binocular Compound Microscope, Automated Tissue

Processor, Kolari Vision Canon EOS RP Full-Spectrum UV/IR Forensics Camera, Forensic Light Source, etc.

See link to the picture: <https://acentdfb.abu.edu.ng/facilities>

- iii. Installation of solar power facility that provides 24 hours' electricity in the Department of Biochemistry main building
- iv. Provision of digital smart boards to classrooms for teaching and virtual interactions in Departments of Biochemistry and Zoology, Faculty of Veterinary Medicine, CBRT and ACENTDFB. The ICT facilities of the centre is highly patronized by the university community.
- v. Provision of state-of-art pieces of equipment in the Forensic and CBRT Laboratories.
- vi. Establishment of Covid-19 testing facility in CBRT.
- vii. Establishment of a biosafety level 2 unit in CBRT through the IAEA funding.
- viii. Establishment of Diagnostic Laboratory housing several precision equipment in CBRT
- ix. Development of standard operating procedures (SOPs) for all laboratories of the centre

Hitherto, under the ACE 1 project; a PGD Forensic Biotechnology classroom and laboratory were established, furnished and equipped in the Department of Biochemistry. Also, a hostel for international students was rehabilitated and fully furnished; and attached with recreation facility. Facilities in the CBRT were upgraded in terms of research equipment and given a facelift. A new animal house equipped with power generator and incinerator was constructed for researches involving both small and large animals.

IMPACT OF THE CENTRE ON THE UNIVERSITY

• Subscription to Science Direct and other online facilities

In its continued effort to enhance learning and research activities in the University, ACENTDFB has from its inception under ACE1 funded the university subscription to Science Direct and other online educational resources. Under the ACE-Impact, the Centre has annually contributed or paid the sum of Forty-Three Million Naira from 2020 to 2022. From 2023 to 2024 alone, the Centre invested the sum of One hundred and fifteen million, sixty-four

thousand, six hundred and twenty-five Naira, twenty-seven kobo (**N115,064,625.27**) for access to Science Direct and other vital online scholarly resources. This expenditure has demonstrably enhanced the academic and research capabilities across the University.

Key Benefits Derived from the Subscription:

1. **Enhanced Research Capacity and Output:** The subscription provides unparalleled access to a vast repository of peer-reviewed journals, books, and articles spanning a multitude of disciplines. This has significantly empowered faculty members, researchers, and postgraduate students to conduct more comprehensive and current research, fostering higher quality publications and contributing to the University's research output and reputation.
2. **Improved Teaching and Learning Experience:** Students and lecturers now have immediate access to up-to-date scholarly content, enriching the learning experience. This enables the integration of the latest scientific and technical advancements into coursework, assignments, and lectures, thereby ensuring that graduates are equipped with relevant and cutting-edge knowledge.
3. **Facilitation of Grant Applications and International Collaboration:** Access to a global body of knowledge allows researchers to identify emerging trends, potential collaborators, and gaps in existing research. This is crucial for developing competitive grant proposals and fostering international research partnerships, which can attract further funding and elevate the University's global standing.
4. **Cost-Effectiveness and Resource Optimization:** While the sum invested is substantial, providing institutional access to these high-value resources is far more cost-effective than individual departmental or personal subscriptions, or the acquisition of numerous physical copies. It ensures widespread availability and optimizes the use of the University's financial resources for intellectual property.
5. **Support for Multidisciplinary Studies and research:** The broad scope of the subscribed databases, particularly Science Direct, caters to diverse faculties and colleges, including

sciences, engineering, medicine, agriculture, social sciences, arts and education. The annual subscription fees paid by ACENTDFB provide the university community-wide access to the full-text of over 4,000 journals and 30,000 e-books. As such, researchers, scientists, scholars and students have full access to download and use the contents of these resources.

The investment made by ACENTDFB has been instrumental in bridging the knowledge gap, accelerating research, improving the quality of teaching, and significantly enhancing the overall academic environment at the University. The continuous access to these world-class online resources is vital for the University's sustained growth, intellectual development, and its pursuit of academic excellence in the national and global landscape. This has contributed in the annual research publications output as well as recent ranking of the university as the best public university in Nigeria

Associate Membership Subscription of ABU to JWEL, MIT, Cambridge, USA

In 2020, ACENTDFB also funded the university's associate membership of the Jameel World Education Lab of the Massachusetts Institute of Technology, Cambridge, Boston, USA. The membership enabled the members of the university community (researchers and students) to have access to online coursewares and training materials of MIT. In addition, about 11 staff of the university, which included researchers from ACENTDFB, ACENPEE and the university administration to partake in trainings on curriculum development and high impact research designs at MIT.

• Human Resources Development

From 2021 to 2025, Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) sponsored staff and student to participate in various international and local workshops/conferences. The Centre's commitment to continuous professional development and knowledge enhancement for both its administrative and research staff, as well as its students, is reflected in the following figures:

- **Total Participants Sponsored:** ACENTDFB successfully sponsored a total of **290** individuals to attend various workshops/conferences.
 - **Staff Participants:** A significant number of **248** staff members benefited from the sponsorship.
 - **Student Participants:** **42** students were also sponsored, demonstrating support for academic and skill development.
- **Workshop/Conference Attendance Breakdown:** The sponsored individuals collectively attended a total of **295** workshops/conferences.
 - **International Workshops/Conferences:** **191** international workshops were attended, providing exposure to global best practices and networking opportunities.
 - **Local Workshops/Conferences:** **104** local workshops were attended, focusing on regional relevance and accessible training.

These figures underscore ACENTDFB's dedication to fostering a learning environment and enhancing the capabilities of its personnel and students. The diverse range of workshops/conferences, both local and international, contributes significantly to the centre's strategic goals and the individual growth of its members.

- **Development of Policies for the University**

The Centre has helped in the development of several policies (regional staff and students recruitment, research, ICT, Environment, Quality Assurance and seed grant).

1. **Policy on Regional Staff and Students Recruitment:** Before now, the university never had a policy for the recruitment of regional staff and students, and this has negatively impacted on the ranking and visibility of the university. ACENTDFB funded and actively ensured the development of a robust policy and structure for enhancing the recruitment of regional staff and students (see the link). The policy included the restructuring of the Directorate of University Advancement to include office for international students. In addition, the Centre

provided facilities including furnitures and office equipment to the directorate.

- 2. Research Policy:** The Ahmadu Bello University Research Policy was last reviewed in 2010. However, the University continues to emphasize commitment to the conduct and dissemination of high-quality research. This must be guided by a properly defined research policy, reviewed periodically to reflect the dynamic needs of our stakeholders from within, and outside the University. The revised policy in 2022 reflects the University's strategic direction and the significance attached to research activities in realizing the fundamental objectives enshrined in its Strategic Plan. Core aspirations of the University, among which is transiting to a Postgraduate University and improvement in global ranking in Research and Innovation, have also been considered. Members of the University community are implored to not only digest the contents of this important policy document, but to also adhere to its provisions in order to make the university research activities world-class. This will ensure that Ahmadu Bello University takes its rightful place among leading universities in producing excellent research capable of solving the myriad problems in our societies.
- 3. ICT:** Ahmadu Bello University is one of the first-generation universities in Nigeria saddled with the responsibility of developing high-level human power in various disciplines. The University has continued to invest substantially in Information and Communication Technology (ICT) to support the emergence and sustenance of competitive world-class teaching, learning and research environment, and to break new grounds in the dissemination of knowledge and information of the highest quality. The Institute is to, amongst others, empower the University by building its capacity to take a pride position as one of the best ICT-driven universities in Africa and the world. The University ICT Policy provides a structure and clear guidelines for handling all the relevant ICT activities to support the achievement of the ICT Vision. Broadly, the Policy spells out best practice, defines the roles and responsibilities of all user groups as well as provides guidance in the delivery, implementation, and usage of ICT. This Policy shall serve,

alongside other related published documents, as the reference document on the University ICT standards. The Policy shall be reviewed, as the need arises, to ensure it remains relevant and aligned to the goals of the University. This Policy describes and documents the acceptable guidelines that support the University's goals and objectives on teaching, learning, research, and support services. This policy seeks to guide designers, developers and users of information and ICT resources on what standards are appropriate and acceptable to the University. The policy outlines the University's expectation for the appropriate use of ICT resources, including guidelines for responsible and ethical behavior online. It also establishes protocols for the management of ICT resources, including security and data privacy measures, disaster recovery and business continuity planning.

4. **Seed Grant Policy:** Ahmadu Bello University underscores the importance of quality assurance in all its activities. The University recognizes the need for a policy document to guide its operations. Therefore, the Ahmadu Bello University Policy on Quality Assurance provides a framework to ensure that the aims and objectives of academic programmes, research conduct and collaborative/community services are optimally achieved, in line with the Vision, Mission and strategic objectives of the University. The Policy is developed with a view to ensuring that the University's activities focus on enhancing student learning experiences. It is intended to guaranty acquisition of relevant skills and competences and the conduct of high-quality research. The policy reflects a mix of the University's tradition and global best practices, aimed at strengthening the effectiveness of service delivery.

ACENTDFB seed grant on entrepreneurship/start-up technology is to promote entrepreneurial activities as well as encourage start-ups and spin-offs within the core mandate of the center. The grant shall be awarded to Faculty members and postgraduate students of the University. Through the ACENTDFB seed grant, the ABU community can engage in establishing companies and business ventures by using their novel ideas in the area of Neglected Tropical Diseases (NTDs) and Forensic Science.

5. **Environmental:** The overall objective of the Environmental and Social Management Plan (ESMP) is to ensure project compliance with applicable national environmental and social legal requirements and the World Bank's environmental and social safeguards. Further, the ESMP aims to identify environmental and socio-economic benefits of the project as well as identifying potential adverse environmental and socio-economic impacts.

The ESMP document also describes measures to prevent, minimize, mitigate and or compensate for identified potential environmental and social impacts within the framework of Environmental, Occupational Health & Safety (OHS) and Community Health and Safety (Corporate Social Responsibility - CSR). It provides a logical framework within which identified negative environmental and socio-economic impacts can be mitigated and monitored. In addition, it assigns responsibilities of actions to various actors and provides a time-frame within which the mitigation measures and monitoring can be carried out.

6. **Quality Assurance:** Ahmadu Bello University underscores the importance of quality assurance in all its activities. The University recognises the need for a policy document to guide its operations. Therefore, the Ahmadu Bello University Policy on Quality Assurance provides a framework to ensure that the aims and objectives of academic programmes, research conduct and collaborative/community services are optimally achieved, in line with the Vision, Mission and strategic objectives of the University. The Policy is developed with a view to ensuring that the University's activities focus on enhancing student learning experiences. It is intended to guaranty acquisition of relevant skills and competences and the conduct of high-quality research. The policy reflects a mix of the University's tradition and global best practices, aimed at strengthening the effectiveness of service delivery.

- **Development of academic brief and revision of strategic plan**
One of the remarkable contributions of the Centre is the support in the development of two important documents important in the

ranking of the university and its compliance to global best practices. The university strategic plan is required for course and institutional accreditation by the National Universities Commission and other accreditation authorities as part of the university's Academic Brief.

The *Ahmadu Bello University's Strategic Plan 2022-2026*, is intended to provide a direction and a roadmap for guiding the University to achieving the vision and ambitious strategic goals it has set itself for the next 5 years. In order to achieve its vision, Ahmadu Bello University has selected the following three strategic objectives to guide its long-term growth for the period 2022-2026:

- to be at par with the very best in the fields of Agriculture, Engineering & Technology, Law and Sciences by 2026;
- to shift focus to 70% Postgraduate studies by 2026; and
- to attain at least 70% self-sufficiency in terms of finance by 2026.

The plan contains ambitious goals that would require the institution to stretch, change and prioritise and strategize for the future. *The Strategic Plan* is documented into three volumes;

- Volume one (the central Strategic Plan Document);
- Volume Two (guides on the Strategic Planning Process, Implementation, Monitoring, and Evaluation)
- Volume Three (the Strategic Plans of all the various Units in the University).

The ACENTDFB also supported the development of a second core document in the Academic Brief, *the Teaching and Learning Policy Document*. The *Ahmadu Bello University Teaching and Learning Policy* is a “core policy” that underpins all others, including the standards and expectations teachers are expected to follow outside the classroom. It presents policies pertaining to many aspects of the basic guidelines, policies, and procedures in the professional atmosphere that should be followed by academic staff members.

The policy is divided into sections that provide definition of key concepts, online blended teaching and learning (OBTL), institutional teaching and learning policy. The document provides the key principles and objectives of the policy. It details the infrastructural

requirements, guidelines for transforming existing and future curricula to conform and courses to conform with OBTL, operationalization strategies and delivery tools. In addition the policy prescribed expected etiquettes to be adhered to by students and staff. Other provisions of the policy provided for staff privacy, security and general data protection regulations, financing of OBTL, and quality assurance framework for OBTL.

The *Teaching and Learning Policy* is applicable to all aspects of teaching and supervision of students and addresses the issues.

- **Support for developing alumni database**

One of ACENTDFB's strategic interventions was the technical and logistical support it provided towards the development of a comprehensive University Alumni Database/Portal (<https://alumni.abu.edu.ng/>). Recognizing the importance of a robust alumni network for institutional growth, research collaboration and resource mobilization, the Centre partnered with relevant units within the University to design and implement a centralized digital platform for capturing alumni records across faculties and departments, Facilitate training sessions for data collection officers to ensure consistency and accuracy in the entry and management of alumni data, and also provide technical infrastructure, including software and hardware support, to improve data management and long-term maintenance.

This initiative has enhanced the university's ability to engage alumni in academic and developmental activities, improving visibility and fostering stronger institutional networks globally.

- **Provision of teaching softwares/teaching aids**

ACENTDFB has played a vital role in upgrading the teaching and learning environment at ABU through the provision of modern teaching software and educational aids. These contributions have enabled the integration of virtual laboratories and interactive learning platforms into the curriculum, especially in biochemistry, biotechnology, molecular biology and forensic science. It has Provided licensed teaching, research tools and packages that are

now in use by both staff and students. It has also supplied multimedia teaching aids, like smart boards, to some of the departments of the university, which have enhanced the delivery of lectures and student engagement as well as the promotion of virtual examinations. These resources have not only improved the quality of instruction but have also facilitated blended learning approaches that align with modern pedagogical standards

- **PASET benchmarking**

In line with its objective to attain global excellence, ACENTDFB actively participated in the PASET (Partnership for skills in Applied Sciences, Engineering and Technology) Regional Benchmarking Initiative. Through this engagement, the Centre facilitated institutional self-assessment exercises that helped the Ahmadu Bello University identify strengths and areas for improvement in governance, research and teaching. The university has also benefited from comparative performance insights with other African universities, which provided a roadmap for improving institutional quality and competitiveness. The benchmarking results contributed to the university's strategic planning processes, fostering a culture of evidence-based decision-making and continuous improvement. This participation reaffirmed the university's commitment to quality assurance and regional integration in higher education, strengthening its reputation as a leading academic institution in Africa.

- **Policies for grant sourcing/commercialization of research outputs**

Policies for Grant Sourcing and Commercialization of Research Output

ACENTDFB has transformed ABU's research, teaching, and institutional capacity. Its influence is seen in strategic governance, international visibility, academic program innovation, commercialization of research, and external grant success—making it a model for other institutions in Nigeria and beyond

ACENTDFB has adopted several key strategies to promote effective grant sourcing and commercialization of research output at ABU:

1. Grant Proposal Development and Mentorship:

- The Centre has revitalized the culture of grant proposal writing within the institution by involving faculty across departments, mentoring researchers, and forming cross-disciplinary research teams. This is to significantly boosted external grant acquisition.

2. Commercialization and Patents:

- ACENTDFB prioritizes the quality and relevance of research with a focus on commercialization. This drive has resulted in twelve patents, the highest from any unit within the University.
- The Intellectual Property and Technology Transfer Office (IPTTO) was enhanced, and a lead researcher from the Centre, Prof. Emmanuel Balogun, was appointed to head this office to streamline the commercialization process.

3. Seed Grants and Entrepreneurship:

- To encourage innovation and commercialization, the Centre introduced a competitive seed grant program, promoting entrepreneurial culture. Five researchers have already received such grants to advance their innovations toward market readiness.

4. Influence on Governance of Teaching and Research

- **Program Development:** ACENTDFB initiated new programs such as MSc/PhD in Biotechnology, Forensic Science, and One Health.
- **Institutional Leadership:** Researchers from the Centre have taken leadership roles in institutional governance (e.g., indexing of publications, IPTTO leadership).
- **Capacity Building:** Through workshops and webinar series, the Centre has contributed to continuous professional development across the University.

DEVELOPMENT IMPACT OF ACENTDFB

ACENTDFB's impact extends beyond the University to the local community and national development:

1. Research Quality and Recognition:

- Research outputs have improved in quality, leading to international awards for students and recognition of faculty by prestigious bodies such as the Nigerian Academy of Science.
- Regional student participation increased from 5% (ACE I) to 28% (ACE Impact).

2. Infrastructure and Service Delivery:

- The Centre built state-of-the-art labs and classrooms, creating a modern teaching and research environment.
- It established Nigeria's first university-based COVID-19 testing center within 10 days and supported the Kaduna State Government to set up its testing facility.

3. External Grants Mobilization:

- ACENTDFB has attracted several high-profile grants, including:
 - \$818,776 from the Chan Zuckerberg Initiative
 - \$626,000 Africa Postdoctoral Training Grant
 - \$576,000 NIH-K43 Grant
 - \$205,000 ARISE Grant
 - Two National Research Funds worth \$200,000
- These achievements led to the recognition of Prof. Y.K.E. Ibrahim as the Overall Grant Fellow of the Year in 2024.

• Upgrading of research and innovation directorate of the University (CL)

• Improving the university visibility

ACENTDFB has increased the Visibility of Ahmadu Bello University through its many of its activities such as:

- **Grants sourcing:** the centre was able attract a number of grants to the tune of \$2 million.

- **Seed Grants:** the Centre instituted the seed grant policy and where five viable concepts from students and staff of the university received 5 million Naira each
- **International students' enrolment:** the University has witnessed an increased number of international students from 5% to about 28%
- **Programme Accreditation:** In addition to national accreditation by National universities commission (NUC), some programmes (M.Sc. and Ph.D. in Biochemistry and Biotechnology) have received full international accreditation by both High Council for Evaluation of Research and Higher Education (HCERES), France and Royal Society of Biology (RSB), United Kingdom
- **Research and Publication:** Increased research output; over 500 peer reviewed articles were published in reputable journals around the world
- **Patents;** with about 13 patents with over 80% registered in Europe
- **Virtual presence:** The Centre has been able to pay for subscriptions to Journals and Bandwidth for the entire University which resulted in increased virtual presence of the University in the form of webinars, lectures, defense of theses and dissertations. Board meetings are possible with members from around the world. In addition, The website of the University was upgraded and made more interactive too
- **Collaborations;**
 - Partnerships with national, regional and international institutions
 - Industry, Non-Governmental Organisations.
 - The Centre was able to organize hands-on workshops on recombinant DNA technology which was attended by Nigerians and other African Nationals.
 - As a result of such activities Ahmadu Bello University ranking has increased to the Best public institution in Nigeria in 2025.

STATUS OF DISBURSEMENT-LINKED INDICATORS

Indicator(s)	Status/Attainment
DLR 2.1 Progress to impact	100%
DLR 2.2 Development impact	100% A copy of Self-assessment report is available indicating the impact made by the centre
DLR 3.1 (PhD Students' enrolment)	100% Once the results of the last verification cycle is released in May 2025; the centre will achieve 100%
DLR 3.2 (MSc Students' enrolment)	100%
DLR 3.3 (Short Professional Courses)	100%
DLR 4.1 (Programme Accreditation)	100% - M.Sc. and Ph.D. Biotechnology were accredited nationally by NUC in 2017, followed by re-accreditation in 2022. Similarly, High Council for Evaluation of Research and Higher Education (HCERES) France accredited the two programmes to have met international standards in 2019. Also, M.Sc. and Ph.D. Biochemistry were accredited internationally by HCERES France in 2024 for the periods of 3 and 5 years respectively
DLR 4.2 (Research Publications)	100% ; additional publications in peer reviewed journals indexed in SCOPUS by members of the centre were available in the lists of publications of 2025
DLR 4.3 (Civil Works)	100% This is achieved based on the completion and furnishing of the new centre's building and equipping of forensic Lab.
DLR 5.1 (Externally generated Revenue)	100% Despite achieving 100%, the centre has compiled its additional externally generated revenues to tune of \$595,446.31 as endorsed by the external auditor and submitted on the AAU M&E portal in 2025
DLR 5.2 (Internships)	100%
DLR 5.3 (Entrepreneurship)	100%

	Seed grants were awarded to five (5) commercially viable concepts to the tune of #25 Million https://acentdfb.abu.edu.ng/assets/uploads/DLI5.3.1/ABU_RESEARCH_POLICY_March_2022_IPTTO_highlighted.pdf
DLR 6.1 (Timely Fiduciary Reporting)	100%
DLR 6.2 (Functioning Internal Audit Unit & Committee)	100%
DLR 6.3 (Financial Online Transparency)	100%
DLR 7.1 (Regional Strategy)	100% https://acentdfb.abu.edu.ng/assets/uploads/DLI7/DLI7_1-Regional-Policy-Full-Report.pdf
DLR 7.4 (PASET Regional Benchmarking Participation)	100% (Phase 1 and Phase 2: achieved) https://acentdfb.abu.edu.ng/assets/uploads/DLI7/7_4_PASET_DSM-Institutional-Intervention-Plan_Ahmadu-Bello-University-Nigeria.pdf
DLR 7.5 (Institutional Impact Milestones) <i>Milestone 1:</i> Develop strategies for increased internally generated revenue and commercialization of research products <i>Milestone 3:</i> Develop an academic brief and revise the strategic plan of the university <i>Milestone 5:</i> Strengthen the Advancement Office and Establish a Tracer System for all university graduates	100% https://acentdfb.abu.edu.ng/assets/uploads/DLI7.5.1/University_Policy_on_Revenue_Generation_and_Research_Commercialisation.pdf https://acentdfb.abu.edu.ng/assets/uploads/DLI7.5.3/Approved_ABU_ACADEMIC_BRIEF.pdf https://acentdfb.abu.edu.ng/assets/uploads/DLI7.5.3/Strategic_Plan_Vol_1.pdf https://alumni.abu.edu.ng/ https://acentdfb.abu.edu.ng/assets/uploads/DLI7.5.5/ABU_tracer.pdf
DLR 7.6 (Innovation in Teaching & Research)	NUC based DLRs
Overall DLIs Attainments	100% Due to this achievement, the centre has benefitted from national re-allocation on research publications (DLR 4.2) and externally generated revenue (DLR 5.1)

COMMISSIONING OF ADMINISTRATIVE BLOCK

The Administrative Block of the Centre was commission by the Vice-Chancellor University, Professor Kabiru Bala. In the event which was among the last before the end of his tenure as Vice-Chancellor, Professor Bala praised the Centre for the cutting-edge research being conducted. He praised the Centre's innovation and commitment to excellence with particular attention to the patents with the hope that the achievements will be scaled up to commercial levels for the benefits of the wider society.







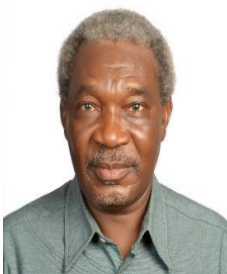


GRANTEES



PROF. Y. K. E. IBRAHIM – NRF GRANT WINNER

An NRF grant of N42, 931,664.00 was obtained in 2021 for a research project titled “Antimicrobial Nano-reinforced Bacterial Cellulose Hydrogel (BCH) from Agro Residues – Production and Application in Wound Healing” by a team of six researchers headed by Prof. Y.K.E. Ibrahim. Other members of the research team were Prof. E.O. Balogun, Prof. M.N. Shuaibu, Prof. A.B. Sallau, Prof. H.S. Mahmud, Prof. T.T. Mohammed and Mr Rabi Bukar. One PhD and 3 MSc students were recruited into the research. These students had successfully completed their research work and graduated. The sequence of a new bch producing local strain of bacteria isolate has been deposited in the GenBank while a German patent (**Patent No: 20 2024 102 959**) of the research result has been obtained. Pitch presentation of the Project output was made at the Africa Centres of Excellence Regional Meeting held in Mauritius, 2024. Poster Presentation titled “A cost-effective biotechnology-enabled production of bacteria cellulose hydrogel via genetic modification of *E. coli*” was presented at the ACE@10 Exhibition, Accra, Ghana in April, 2025. One manuscript is currently under review.



PROF. MOHAMMED MAMMAN – NRF GRANT WINNER

Prof. Mamman’s National Research Fund grant (TETF/DR&D/CE/NRF/2020/SETI/01/VOL.I) of the sum of N38,012,567.00 was for the project titled “DNA and Protein Subunit Vaccines Development against African Animal Trypanosomiasis: Targeting Genes Encoding Essential Surface and Non-variable Proteins”. Other members of the research team are Prof. M. Mamman, PI, Deputy of the research team are Profs. E.O. Balogun, Sani Ibrahim, I.A. Umar, Y.K.E. Ibrahim, J.K.P. Kwaga, M.N. Shuaibu and Junaidu Kabir and Dr Gloria Chechet. External

members are Prof. Sørge Kelm, of University of Bremen, Germany and. Prof. Kenji Hirayama of Nagasaki University, Japan. The aim of the work was to develop DNA vaccine candidates targeting MBAP, TS, GK and MSP of *T. congolense*, *T. vivax* and *T.b. brucei*, respectively, and examine their protective efficacy in experimentally infected Balb/c mice. The project has graduated 4 PhD students and published 2 research articles in Q1 journals (<https://doi.org/10.1016/j.micpath.2025.107526>; <https://doi.org/10.22541/au.172723864.45704386/v1>). Three conference papers had also been presented papers at the WANIDA Symposium on 8-10 March 2023 in Accra, Ghana.



PROF. EMMANUEL OLUWADARE BALOGUN – NIH K43 GRANT AWARDEE

The NIH K43 career development grant is one of other grants won by Professor Emmanuel Oluwadare Balogun. The grant sum which is \$570,000 is for research on drug development for Human African trypanosomiasis (HAT). The project was designed to find novel compounds that ablate energy production in the disease pathogens and killing them. He has successfully designed and validated new classes of safe and effective anti-Trypanosoma drug candidates, which has the potential to contribute to the health and economic development of Africa. These findings have been published in several Q1 journals and presented at six international conferences.



DR. IDOWU AIMOLA – APTI AND CZI GRANT WINNER

Dr Idowu Aimola, a scientist and researcher in the Department of Biochemistry and at the Centre has two grants- the African Postdoctoral Training Initiative (APTI) grant of \$248,000 and Chan Zuckerberg Initiative (CZI) grant of \$818,000. The APTI grant was to identify novel druggable targets for sickle cell diseases (SCD) by comparing the genes of immature blood cells of normal and SCD individuals. Under this grant, he received training in single-cell genomics techniques and computational approaches in the Lab of Dr. Francis Collins

former NIH Director), at the Center for Precision Health Research at the National Human Genome Research Institute (NHGRI). The CZI grant which is collaborative research with institutions in Nigeria and USA is to establish the African Placenta Cell Atlas by studying early- and long- term effects during normal and perturbed pregnancy from environmental factors.



DR. EMMANUEL AMLABU – ARISE GRANT WINNER

Dr. Emmanuel Amlabu is a visiting scientist and researcher at the Centre. He won a grant of \$205,000 funded by the European Union and the African Union Commission under the platform of the African Research Initiative for Scientific Excellence-Pilot Program (ARISE-PP). The grant is for the development of novel antimalarial therapeutics targeting *Plasmodium falciparum* lipid-binding proteins. The Project which is hosted by the Centre has recruited three (3) PhD and 2 MSc students drawn from Prince Abubakar Audu University, Ayingba and Ahmadu Bello University, Zaria besides engagement of 2 trainee scientists. It will also provide opportunities for junior researchers in the institutions to upscale their research capacities.



EDCTP3 GRANT BY DR. GLORIA CHECHETJ

Dr. Gloria Chechet, one of the Researchers at the Centre was named the Scientific Project Leader for the Multiplex AI. This is funded by a grant of €5 million from the European & Developing Countries Clinical Trials Partnership (EDCTP3). The project titled “the Intelligent Autonomous Microscope: an AI Platform for Multiplex Parasite Diagnosis at the Point-of-Care” is to develop an innovative approach that will transform conventional microscopes into smart, AI-driven diagnostic tools capable of detecting and quantifying multiple parasitic infections in a single sample. This is

will be achieved through the integration of deep learning, mobile-based microscopy, and real-time image processing, ensuring high diagnostic accuracy even in resource-limited settings. The project brings together an international consortium of experts with Quique Bassat as Project Leader from ISGlobal in Barcelona, Spain. Miguel Luengo from SpotLab, also in Spain is the Co-ordinator.

ACENTDFB JOINS WANETAM-4 TO STRENGTHEN REGIONAL COLLABORATION ON EPIDEMIC PREPAREDNESS AND NEGLECTED TROPICAL DISEASES



The Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) has been successfully integrated into the West African Network for

Tuberculosis, AIDS and Malaria (WANETAM), a consortium established in 2009 and supported by the European and Developing Countries Clinical Trials Partnership (EDCTP) to combat poverty-related diseases through collaborative research and capacity building. As one of 25 institutions across 12 West African and 5 European countries in the WANETAM-4 consortium, ACENTDFB brings its specialized expertise in molecular epidemiology, diagnostics, and innovation in neglected tropical diseases (NTDs). Led by Prof. YKE Ibrahim, Prof. Mohammed Mamman, and Dr. Aliyu Muhammad, the Centre will contribute to Work Package 4; Special Collaborative Training on Epidemic Preparedness and Surveillance (SCTEPS) by training 15 MSc candidates from public health institutions and supporting a One Health-driven capacity-strengthening initiative. This involvement will emphasize practical, policy-relevant, and community-based approaches to epidemic preparedness, ensuring sustainability and local ownership across the sub-region.

ACENTDFB STUDENTS BAG TWO AWARDS AT SIRA

Two students of the Centre, Dr. Gouegni Edwige Flore and Mr. Aliyu Mukhtar emerged winners of the ACE Impact Maiden Students

Innovation Research Awards (SIRA) held in the Gambia in November 2022. Ms Goueni's research was entitled "Immunogenic Potentials of Trypanosoma Congolese Flagellar Pocket Membrane Bound Acid Phosphatase" emerged first under the Agriculture theme. Mr Aliyu emerged 3rd under the Health theme with a study titled "Prevalence of Microsporidia in Association with Plasmodium Falciparum and Wuchereria Bancrofti in Anopheles Gambiae Within Ahmadu Bello University, Zaria (Samaru Campus)". The SIRA focuses on students to boost their interest in implementing the skills and knowledge acquire and aims at driving national and regional development through research established by the Reginal Facilitation Unit for ACE Impact, the Association of African Universities, with support from the World Bank. A total of 428 applications was received from the 11 participating countries with each awarded receiving cash grants ranging from \$2000 to \$4000.



Ms Gouegni and Mr Aliyu receiving their awards from the Gambian President and Minister of Education



The awardees and others with the Vice-Chancellor of the Ahmadu Bello University, Professor Kabiru Bala

SHOWCASING VIRTUAL TEACHING AND LEARNING PLATFORM

The Centre showcased its Virtual Teaching and Learning platform at the Maiden Research Fair of the parent institution, the Ahmadu Bello University in January 2025. The Fair was themed “Showcasing Innovation, Celebrating Excellence. It provided platform for researchers to present groundbreaking innovations. The Vice-Chancellor of the University, Professor Kabiru Bala launched the event.

In line with the key objectives of the Centre to enhance the teaching and learning of biochemistry and biotechnology within and beyond the University, a Doctoral student at the Center, Mukhtar Aliyu Ikara who is also a Lecturer in the Department of Biochemistry, developed a virtual teaching and learning system (<http://dararrafesch.com.ng>). The platform enables students to learn remotely no matter their location, aligning with the University’s blending and remote learning priorities. It offers diverse features including newsletters, blogs and the ability to create multiple courses. It also enables lecturers to engage in live discussions with students, register users and upload different formats of materials. There is also the capacity for assessments. The system also enables students to track their enrolled courses and progress as well as integrated payment system.

The Vice-Chancellor noted at the Fair that after teaching, research is the University’s mandate aimed at addressing societal challenges. This was the primary reason for the establishment of the Office of Deputy Vice-Chancellor for Research and Development. He commended the Centres initiative and encouraged the expansion of the platform to accommodate more courses as well as improving accessibility. Further, he praised researchers for their efforts in finding solutions to real-world problems and urge them to collaboration with other departments and research centres to further enhance their work.

The fair featured diverse array of innovations selected from various departments and research centres including the National Agricultural and Extension Liaison Services (NAERLS), the Institute

of Agricultural Research (IAR) and the Departments of Mechatronics, Mechanical, Automotive and Computer Engineering.



Mukhtar Aliyu showing the Virtual Teaching and Learning System



Ibrahim Babangida Sani, the Centre's ICT Officer making a presentation at the Fair

Impact of the Centre – Outcomes of the DLI 2 Assessment

ACENTDFB

AFRICA CENTRE OF EXCELLENCE FOR NEGLECTED TROPICAL DISEASES AND FORENSIC BIOTECHNOLOGY

 DLR 2.2
SCORE 4/5

OVERALL ASSESSMENT

The evaluators find that the ACE has demonstrated significant impact in all three domains, with multiple examples that impact has been realised. Additionally, the development impact seems to be a part of the governance, culture and structures of the centre and is likely to continue in the future.

SECTOR		Sub-assessment: The centre collaborates with a couple of private sector actors and has been involved in training and research projects. However, the response rate to the survey was relatively low and the responses lower than average. The evaluators feel that there is evidence for impact, but that there is still work to be done to increase and broaden this impact. 3/5 ■ The centre has a technology seed grant scheme to support the establishment of start-ups and spin-offs ■ The outreach processes to sectoral stakeholders are well embedded in management and governance. ■ The centre has intensive collaborations with (at least) six private institutions.
RESEARCH		Sub-assessment: The research the centre is doing is relevant and impressive, multiple students have received awards for research findings and publications. The centre has good structures in place to safeguard the quality of research, through a quality monitoring system and support for research in conducting research and publishing. 4/5 ■ ACENTDFB focuses on thematic research areas including African trypanosomiasis, filariasis, onchocerciasis, rabies, dengue, and chlamydiosis. ■ The centre has a successful patenting strategy, that has resulted in a high number of patents.
SOCIETY		Sub-assessment: The centre explains a variety of ways they engage the local and regional community and contribute to resolving local and regional issues and works with a variety of local, state and federal governments to achieve feedback. 4/5 ■ The research the centre is doing is contributing to reducing the disease burden. ■ The centre played an important role in the COVID-19 response through the creation of a testing facility and providing expert advice in the design and construction of laboratories to the State for the state COVID-19 lab.

ACENTDFB

AFRICA CENTRE OF EXCELLENCE FOR NEGLECTED TROPICAL DISEASES AND FORENSIC BIOTECHNOLOGY

 DLR 2.2
SCORE 4/5


Almost **20%** of publications are co-publications with government

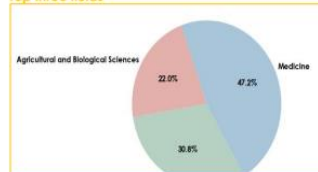
The centre has **12 patents** in the area of drug discovery and diagnostics.

2 research outputs were selected during a research pitching competition at the ACE Impact Regional Workshop in Mauritius.

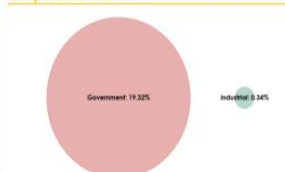
Number of Publications: 295

Number of Open Access: 204

Top three fields



Co-publications

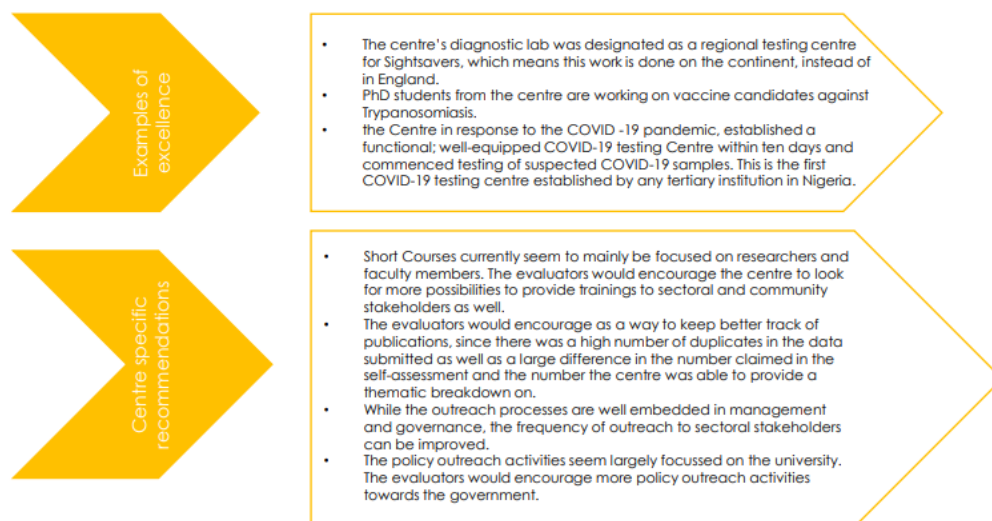


2 students won Student Innovation Research Award (SIRA) in 2022

ACENTDFB

AFRICA CENTRE OF EXCELLENCE FOR NEGLECTED TROPICAL DISEASES AND FORENSIC BIOTECHNOLOGY

DLR 2.2

SCORE **4**/5

CHALLENGES OF IMPLEMENTATION

The implementation of the Project faced a number of challenges. Key among these were:

- Prevailing insecurity in the northern region (insurgency, banditry, kidnapping and rustling) had negative effects on the initial students' subscription to the programme of the Centre and attraction of international experts. Though the location of the Centre has been unaffected by the insecurity, one of the impact has been a shortfall of 5% in enrolment in the PhD programme.
- High inflation rate, leading to increased project cost and reduced absolute value of materials. Therefore, this necessitated a review in the project activities and cost allocations. As a results, some project activities had to be
- scaled down and in some cases suspended.
- Delayed integration of the Centre into the financial planning of the parent institution
- Limited appropriate internship placement labs

- Delay in disbursement of funds. Frequent delays in funds disbursement and release have led to changes in the timelines for the achievements of milestones.

TOWARDS THE FUTURE AND SUSTAINABILITY

To ensure sustainability (Financial, Human Resource and Environmental) of the Centre and achievement of its project objectives, the Centre has instituted several actions, among which are:

- **Fiduciary:**

As part of its effort to ensure transparency as mandated by AAU/WB, the Centre's financial transactions are now online and financial reports are being made available on its website. The reconstituted Audit Committee has been pro-active in its assignment and keeping to schedule in its report submission. Several documents including Interim Financial reports, Internal Audit reports, Procurement reports, Annual work plans, etc. were uploaded. Interactions have been held with the External Auditors to address and facilitate timely completion and submission of reports. One of the problems identified with this DLI is the often downtimes in the internet network of the University and subsequent inaccessibility of documents of the Centre occasioned by national power grid collapse. As a result, the Centre now also upload its documents on the cloud.

- **Students' Enrolment:** The proportion of regional students have increased from a mere 5% in ACE I to 28% under ACE Impact.
- **Integration of the Centre into the University Organogram.** This has already been done. The University management has already taken step to include the Centre in its subsequent budget plan.
- **Payment of Staff Emoluments:** Since the establishment of the Centre, the University has been responsible for payment of staff salaries and other emoluments. In addition, the cost of utilities is being borne by the University.

- **Staff Development, Leadership and Succession Planning**
 - ✓ Assigning young faculty members as Principal Investigators (PI) and Lead Persons – More than 60% of the PIs of the proposals recently submitted are young academics.
 - ✓ Ongoing capacity building of younger academics and administrators on project management, research networking, etc.
 - ✓ Incorporation of young academics in the Centre's Management Organ and assigning them significant responsibilities.
- **Grant Sourcing and Revenue Generation**
 - ✓ Establishment of Grant Writing Committee; The Committee, comprised of researchers drawn from various units of the Universities and collaborating institutions in Nigeria and beyond; has been responsible for the development and submission of several proposals in recent times. This committee has been active, submitting over 14 proposals in this year.
 - ✓ TETFund Grants: In addition, all researchers are being encouraged to apply for the national Tertiary Education Trust Fund (TETFund).
- There is ongoing engagement with the National Institute for Security Studies in joint mounting of the MSc Forensic Science. Improved commercialisation of facilities and services such as diagnosis, laboratory analyses, trainings and consultancy.
- The Ministry of Health and Social Welfare has designated the Centre's diagnostic Lab as a reference laboratory for NTDs in Nigeria. Towards this, the laboratories of the Centre have been audited, and steps are being taken towards their national and international accreditation.

SELECTED PRESS REPORTS

DAILY TRUST, Monday, August 19, 2020

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Prof. YKE Ibrahim, Professor of Pharmaceutical Microbiology, Ahmadu Bello University, Zaria and Centre Leader, Africa Centre of Excellence in Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB) spoke with Sam-Loxo SMITH on the ACE grant contribution, covid-19 and other related issues in the health and education sector in the country.

What informed the Africa Centre of Excellence ACE-Grant and its establishment?

The World Bank noticed that many developing countries, particularly in Africa, are unable to address their socio-economic problems due to inadequate skilled, competent and efficient human resources being produced from higher education institutions in the region. Improving facilities that will address this gap requires substantial funding to target critical areas. The ACCE focuses on research and human resource development in tertiary educational institutions. One major problem the World Bank observed was lack of synergy between educational institutions, the private sector such as the industry and even the local users. There was no translation of research output into products as such, the populace benefit in terms of their socio-economic uplift from research institutions and innovations from higher educational and research institutions. The World Bank identified that one way to address this anomaly is by improving research institutions or centres to focus on addressing specific areas of needs for such developing countries.

The project started with the West and Central African region, focusing on three thematic areas: Agriculture, Health and ITSM (Science, Technology, Education and Mathematics). These three thematic areas are known to drive the economic development of any country. Prior to this, the World Bank observed that there must be enough human resources that will be able to be innovative, develop strategies and tools for moving the country and changing its economic status so as to build critical mass of human resources that can be involved in sustained research, and so that will be required to manage the various sectors of the economy.

Following discussions with and eventual negotiations between the World Bank and the Government of the Union in the West and Central Africa region, the World Bank advanced the idea to set up Centres of Excellence in the region to be managed through the Association of African Universities. A new model was adopted in which only seed money and not the entire grant is provided and centres are only provided further funds following achievement of set objectives. In essence, centres are required to produce results and after verification, they are given further instalment of money to carry out further activities in accordance with their approved implementation plans. It is termed Endowment Funded Institution (EFI). This is because previous interventions did not yield desired effect especially in the way these projects were managed. It is like doing research with a business plan to it.

To what extent was this objective method looking at Centres by Centres?

I think largely. I will rather say virtually all the phase 1 Centres of Excellence established not only in Nigeria, but in the West African region have been able to realise substantially the research and product objectives that were the main reason for their initial existence. The success achieved by these Centres led to establishment of another batch of ACCEs in the East and Southern African region. At the end of last year, 2019, a new round of grant was established, second ACCE (Phase 2), with the aim of strengthening what has been achieved and sustain growth across the Centres. From the initial 12 in the West African and Central Africa region, the number rose to 24. This is in addition to the 10 in the East and Southern African region. The success achieved, across the two ACCE Centres in Nigeria including an Centre, were successful in getting new grants and two new other Centres emerged. We have been able not only to change the way we do research, and setting research output in the laboratory to innovation, changes in the research environment and long-term methodologies, but also engaging in research that addresses societal problems.

Whereas look at some of these achievements, like a -my centre by centre in terms of success stories, where does Ahmadu Bello University stand?

Ahmadu Bello University had established one Centre which is the Centre for Neglected Tropical Diseases and Forensic Biotechnology. We started a new programme recently MSc and PhD in Biotechnology.

This was the first time where a university in Nigeria is offering higher degree programmes, especially a PhD and a MSc degree that will focus on Neglected Tropical Diseases. These are diseases which affect largely the rural populace (they constitute a majority of the population) have low attention from the Government and non-governmental organisations. The affected population is usually a way of life that is usually resistant to agricultural production. We have been able to do Centre to create a baseline data on the epidemiological distribution of the various NTDs, particularly the data in which we initially started to focus on research, diagnosis, disease (pathogen) and drug development, diagnosis, control and other (drug) use.

We have also initiated our research focus to include those where the infectious, parasitic, fungal and helminthiasis. We have made substantial progress in developing drug resistance and identifying genes for possible development in diagnosis, as the detection of some of these diseases. It has not reached



Prof. YKE Ibrahim, Professor of Pharmaceutical Microbiology, Ahmadu Bello University, Zaria and Centre Leader, Africa Centre of Excellence in Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB).

The ACE focuses on research and human resource development in tertiary educational institutions.

marketing, but at least we have been able to establish some of the tests that are involved in the diagnosis of the diseases. In addition, we have been able to attract students from outside Nigeria, mostly from Cameroon and the Central African States that have graduated. My centre has been able to quickly respond to the COVID-19 pandemic by establishing a diagnostic Centre that is linked among the best in Nigeria. It recently also assisted the Kaduna State Government to establish and activate a new testing Centre in the State. It is worthy of mention to state that the University has two other Centres of Excellence funded by the World Bank, Centre for New Paradigm in Engineering Education and ICT/IT, thus becoming the only University in Nigeria having three World Bank funded ACCEs. My Centre played significant role in this regard.

Programmes of the Centres have earned international recognition. This is the first time, programmes of any University in Nigeria are internationally accredited - a great achievement for Nigerian universities.

Each of the Centres in Nigeria have specific focus of research. For example, the Centre for Tropical Agriculture, which is based in Kano is involved in developing strategies and implementation for agriculture in an arid region. That is, even in absence of rainfall or water, you can actually start engaging in agricultural production. It has students from well over 10 countries outside Nigeria. In Benue State University, Makurdi, there is another Centre that has been able to ensure that post harvest losses, which is one of the major of agriculture sector has been reduced minimally as a result of developing preservation strategies for such agriculture products. ACCE/NUCduha is in University of Ibadan mostly involved in Photo media use and has been involved in research into medicinal products which can



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be used to increase disease surveillance, and I know that they have also made some substantial progress.

ACEDD: The Centre for Genomics in Infectious Diseases, have been very successful particularly in the diagnosis of several disease conditions, especially in the case of Ebola. They have recently been involved in sequencing the recent Coronavirus, Covid-19, in collaboration with NCDC. CEGID based at University of Benue has been looking at how to improve maternal health, which it has actually been involved in. Reproductive health and they have also been able to ensure that the Government now has an International Instrumental accreditation, which is again the first of its kind in Nigeria.

CEGID at Benue has been able to graduate a high number of medical students within a short period of three years, an achievement for any Nigerian University. GML, PhD based at Obafemi Awolowo University, has been able to develop several software programmes and published studies comprising. There are two other Centres, one at ACCE, Abia and the other at University of Agriculture, Abidjan.

In all, how many students have been impacted?

In terms of students impacted it depends on the centres as well as category of students. For example, my Centre, has been able to engage training students, short training courses, not only for students but workers in various institutions, governmental or non-governmental organisations. We have been able to impact new techniques, not only in Nigeria, but across the continent. Chido, Joshua Femi, some of our past graduate students actually came from Cameroon, Guinea and to refer you back to the total number for example, in my Centre, we have been able to train over 400 participants in short course programmes. We have currently over 100 MSc students enrolled in the programme (I have graduate) with PhD students.

Based on other Centres, because of the nature of their programmes have been able to produce much more. Centres in Port Harcourt have well over 500 master students and close to about 700 MSc students. So it is going to be difficult for me to give you the figure for each Centre because the figure varies. In general for Nigeria, we have trained over 3000 MSc students, and over 1000 PhD students. I am not even talking about West Africa.

Now looking at the issue of effective coordination, how do you think that is?

That is one of the hall marks of the activities of the ACCEs. For the Nigerian ACCEs, the coordinating Centre is the National University Commission. In 3 it is actually a National Commission for the ACCEs in Nigeria. For the West African sub-region, we have the Association of Africa Centres for Health Research in Ghana. There are inside the World Bank itself. The World Bank, actually set up a group, that comprise of the Technical Task Force leaders, as well as other technical officers that continuously monitor the activities. They also employ the services of experts that continuously pay visits to the Centres.

The Centres submit reports twice every year and supervisory visits to ensure that they are not deviating from their programme objectives. Where programme objectives are not being achieved, immediate measures are taken to ensure that identified deficiencies are corrected. This has been very instrumental to the success that have been achieved. Each thematic ACCE also network and share information, success stories and where there are problems, how do we address such problems.

Has the establishment of the ACCEs been able to adequately address health issues in African countries?

There are only four Health ACCEs in ACCE I in Nigeria and each of these centres address specific health challenges. My Centre focuses on Neglected Tropical Diseases and of course Parasitic Diseases. Because this is an area that typically other institutions in the country currently addresses. CEGID in Benue addresses Reproductive Health because there is a high maternal mortality especially during child birth. ACEDD in Obafemi Awolowo University, because this is an area that typically other institutions in the country currently addresses. CEGID in Benue addresses Reproductive Health because there is a high maternal mortality especially during child birth. ACEDD in Obafemi Awolowo University, because this is an area that typically other institutions in the country currently addresses. CEGID in Benue addresses Reproductive Health because there is a high maternal mortality especially during child birth. ACEDD in Obafemi Awolowo University, because this is an area that typically other institutions in the country currently addresses.

We are also trying to develop diagnostic tools that can be used to identify some of these NTDs, that is exactly what ACEDD is doing, trying to develop diagnostic tools. In each Centre has been very successful in trying not only to identify the



For every success story, there must be challenges, what are those challenges in achieving the objectives of the ACCE?

I think the first major challenge one will look at is having to work by the constraints, even to the University itself. Because the concept is totally different from the previous concept of doing research and teaching. We are not only doing research for the purpose of research; what we are actually involved in, is manufacturing manually.

The DLT concept is new. One is not being given the research, but asked to achieve and then you get paid. For it, there were the initial challenges. At some of the centres started from scratch, the initial setting problem in getting research facilities within the institutions and then being accepted by the host institutions that they only have a supervisory role, but not day-to-day role in the management of the Centres. The visitors are actually insulated from the normal administrative bureaucracy that are associated with Nigeria, universities and even generally in the country.

But immediately they continued and started seeing the achievement, the stakeholders started to buy in. Another challenge, which is still very much around is the involvement of the private sector, because they are the ones that will be involved in marketing the research output. For the agriculture sector, it was a bit easy, but for the health sector, it is difficult. This is because most of the industries and the private sector are really not involved in social production. Take for example, one of the problems my Centre and ACEDD had in the fact that our students had to do a minimum of one month internship in private institutions that is engaged in similar activities - very few of which exist in Nigeria. In getting our students a place for them to do internship has been very difficult. I have been able to gradually overcome this problem and people are beginning to buy in from NGOs and private organisations.

How can ACCE be of help to the Society in General, e.g. Communities?

Each ACCE health Centre has its mandate. We have been able to establish a very standard testing laboratory for the infection and are currently involved in diagnosis in collaboration with the State Government and the Nigeria Centre for Disease Control (NCDC). In General, we are very much focused on neglected tropical diseases in the Country. We are also looking at new drugs that are being developed, looking at the existing ones and developing new ones that could be effective replacement for the ones that are already in the market.

We are also trying to develop diagnostic tools that can be used to identify some of these NTDs, that is exactly what ACEDD is doing, trying to develop diagnostic tools. In each Centre has been very successful in trying not only to identify the

problem, but also profile solutions. It is in addition to all, research, teaching, and research. My Centre is actually involved in communication/counselling campaign. For example, we do have advocacy workshops with business because they are steps for their business operations, and some of these steps are actually the solutions of other issues.

In the business, we are linking with the security agencies. We had scheduled a stakeholders meeting with security agencies before the advent of Covid-19 pandemic. 11 different security agencies have expressed their participation.

What has been the relationship between ACCE and the Government and how does it bring solutions to health challenges?

The ACCE itself is a programme of the Federal Government, initiated and started by them because the fund from the World Bank is a fund given to the Federal Government of the Country. And so, ACCE Centres were established essentially in Universities that are Federal, State and Private because the funds that are addressed by these Centres are the problems of the country. In spite of the fact that the fund is given by the Federal Government, it is the Federal Government that pays back that loan, despite the fact that the State and Private Universities benefit from it, because the target audience is the entire country population. In we are all addressing the problems of economic empowerment and the issues of health and ITED because all these issues are interrelated. Empowerment of ACCE is a brain child of the Federal Government, and that's why the coordinating body is the National University Commission. Not only are health challenges addressed in terms of diseases, the agriculture addresses issues of poverty and ITED, addresses issues of technological advancement. In all these, we are able to ensure that people become more educated, and are equipped to be able to contribute to their own. The driving goal is that graduates of this programme should be able to set upon their own. They do not have to rely on government for employment, because it is the private sector that drives the economy of developed nations.

Will you say emphatically that the objective of establishing this has reasonably been very much achieved?

Very much achieved, and as I mentioned that earlier it is the success of the ACCE I Centres that led to the Eastern and Southern Africa to also join in and increase centres from 17 to 48 under the ACCE Impact.

Over 10 African countries are involved in the ACCE Impact in the West and Central Africa region, from initial fund committed to more than 15. The ACCE I made in March due next. The ACCE I grant was for a period of five years. The ACCE Impact is for another 5 years.

In total how many Centres do you have and any plans to direct to other areas?

Under the ACCE Impact, we have 44 Centres in the Central and West Africa region and 41 ACCE II Centres in the Eastern and Southern Africa. So, we are talking of about 85 ACCE centres in Africa. Of this, Nigeria has 17 ACCE Impact Centres.

The ACCE programme is a project that will not end because fund no longer comes from the Federal Government as from the World Bank. All Centres have made plans in such a way that even when the funds stop, they will still be able to continue their activities. Many have been able to get additional grants outside the initial bracket of the World Bank because Centres are encouraged to ensure the grants from other bodies. Centres have been trained to sell themselves like a business. One you are able to reform as attractive, other grants or funding body will be ready to talk to you to address the problems that they are also interested in.

What are your ultimate expectations and goals at the end of the day?

I think we should be able to have built critical capacity of response in the area of diagnosis, treatment and management of Neglected Tropical Diseases, as well as become the reference Centre for such diseases.



COVID-19 Research Laboratory

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Prof. YKE Ibrahim Now Center Leader of ABU Africa Center of Excellence
BY: ADMIN / ON: SEPTEMBER 21, 2019 / WITH: 0 COMMENTS



Prof. Ibrahim who has several years of working experience, having worked in various capacities, started as a Graduate Lecturer in 1982 at the University and through hardwork, which must have been the secret of his brilliance, rose through the ranks to become Professor in 2004.

During these years, he served as Head of Department for four years, Assistant Dean for two (2) years and Director of a Centre in the University for eleven (11) years. He was a member of the Science Complex of the University Appointment and Promotion Committee for 15 years (the longest serving member), and currently a chair or member of several ad-hoc committees in the University.

Prof. Ibrahim who bagged Dr. Sc. Hum (Doctorate in Humanities) from University of Heidelberg, Germany in 1993, and certificate in German Language in 1993, obtained an M.Sc. in Pharmacology and B. Sc. in Pharmacy from ABU in 1985 and 1990 respectively.

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08/08/2024, 11:06 Prof. YKE Ibrahim Now Center Leader of ABU Africa Center of Excellence » Education Monitor News

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<https://educationmonitornews.com/prof-yke-ibrahim-now-center-leader-of-abu-africa-center-of-excellence/>

State of the Nation: An Open Letter to President Bola Ahmed Tinubu and Fellow Nigerians
BY: ADAM ISA HAZIRI / ON: AUGUST 6, 2024
By Ahmed Shamsu Isa, Dear President Tinubu and Fellow Nigerians, In addressing

BREAKING: A Trigger-Happy Soldier Brutally Kills a 16-Year-Old Boy in Cold Blood in Somere Zaria
ON: AUGUST 6, 2024
By Waziri Isa Adam in a horrific incident that has left a

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EDUCATION

ABU Gets British, French PhD Accreditation On Tropical Diseases

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The Royal Society of Biology of the United Kingdom and the Higher Council for Education and Research (HCERES) of France have accredited the MSc and PhD programmes run by the Ahmadu Bello University, Zaria on neglected tropical diseases.

The ABU's Africa Centre of Excellence in Neglected Tropical Disease and Forensic Biotechnology (ACENTDFB) got the nod of the two European institutions to start the two postgraduate academic degrees with effect from September, 2019 to September, 2024.

FEATURED VIDEOS

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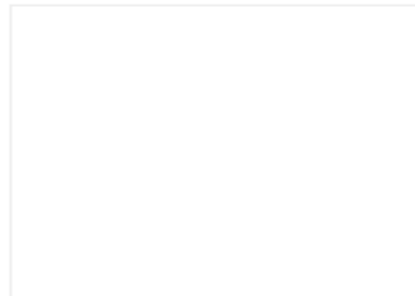
Thung Khe Pass, W...

People from both Hoa Binh and Son La are fortunate to live in such beautiful places. But have you ever admired this mountain pass from above? Try driving from Hanoi and enjoy the view while sipping a cup of coffee and eating some boiled corn. I guarantee you won't forget

Head of ABU's Public Affairs Directorate, Dr. Sama'ila Shehu, made this known on Sunday, saying that the programmes are domiciled in the Department of Biochemistry.



NEWS



ABU's Degrees On Tropical Diseases Get First International Accreditation

By Isa Sa'idu, Zaria

Wed, 23 Oct 2019 3:04:13 WAT



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GALLERY

ACENTDFB building and some facilities









One of the Laboratories of the Centre



A Group of Regional Students of the Centre



The Secretary to the Government of the Federal Republic of Nigeria, Mr. Boss Mustapha, commissioning one of the facilities at the Centre (2023)



The Deputy Governor of Kaduna State, Dr. Hadiza Balarabe, the Kaduna State Commissioner of Health and the Chief Medical Director of the ABU Teaching Hospital inspecting facilities of the Centre (2022)

FINANCIAL INFORMATION

SUMMARY OF OTHER GRANTS RECEIVED

RECEIPTS	2022		2023		2024		2025		TOTAL	
	USD	NAIRA	USD	NAIRA	USD	NAIRA	USD	NAIRA	USD	NAIRA
NATIONAL INSTITUTE OF HEALTH	115,384.00	46,935,000.00	230,688.00	193,672,000.00	115,344.00	180,448,000.00	0.00	0.00	461,416.00	421,055,000.00
APTI	31,384.64	12,766,000.00	72,195.00	60,611,000.00	39,570.00	61,904,000.00	0.00	0.00	143,149.64	135,281,000.00
NATIONAL RESERCH FUND	106,989.83	44,496,000.00	12,726.14	11,404,000.00	14,463.13	12,880,000.00	0.00	0.00	0.00	68,780,000.00
ARISE-PP	0.00	0.00	40,900.00	40,870,000.00	70,000.00	109,510,000.00	50,000.00	76,351,500.00	160,900.00	226,731,500.00
CHAN ZUCKERBERG INITIATIVE	0.00	0.00	184,000.00	154,476,000.00	313,055.06	489,752,000.00	0.00	0.00	497,055.06	644,228,000.00
CAMBRIDGE GRANT	0.00	0.00	3,511.56	2,948,000.00	0.00	0.00	0.00	0.00	3,511.56	2,948,000.00
TOTAL	253,758.47	104,197,000.00	544,020.70	463,981,000.00	552,432.19	854,494,000.00	50,000.00	76,351,500.00	1,266,032.26	1,499,023,500.00

SUMMARY OF EXPENDITURES

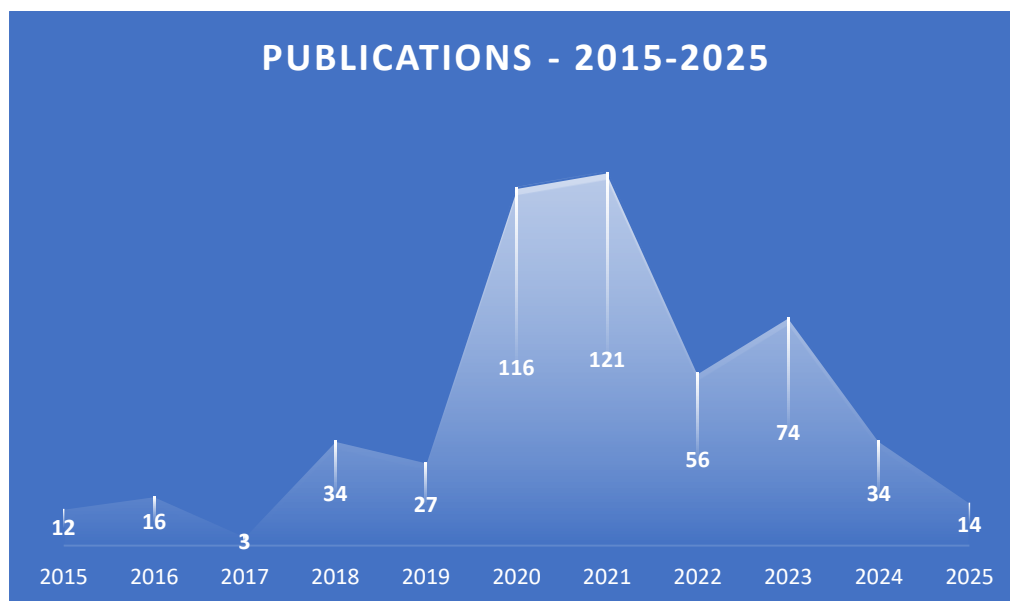
PAYMENTS	2021		2022		2023		2024		2025		TOTAL	
	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE	PAID ON CENTRE'S BEHALF BY THE NUC	PYT BY THE CENTRE
BUILDING	0.00	5,323,000.00		0.00	0.00	381,571,000.00	0.00	28,131,000.00	0.00	0.00	0.00	415,025,000.00
EQUIPMENTS	35,701,646.34	7,876,000.00		134,631,000.00	0.00	22,401,000.00	0.00	248,189,000.00	0.00	2,727,000.00	35,701,646.34	415,824,000.00
LOCAL CONFERENCES	0.00	1,210,000.00		6,428,000.00	0.00	5,287,000.00	0.00	14,231,000.00	0.00	0.00	0.00	27,156,000.00
OVERSEA CONFERENCES	0.00	839,000.00	47,240,833.66	29,072,000.00	53,191,631.52	45,872,000.00	244,789,687.76	94,383,000.00	121,116,722.40	103,335,016.09	466,338,875.34	273,501,016.09
RESEARCH AND DEVELOPMENTS	0.00	18,116,000.00		26,999,000.00	0.00	381,643,000.00	0.00	738,579,000.00	0.00	87,583,888.47	0.00	1,252,920,888.47
ACCREDITATION EXPENSES	0.00	0.00		5,975,000.00	0.00	845,000.00	77,322,742.90	729,000.00	0.00	0.00	77,322,742.90	7,549,000.00
PUBLICATION AND PUBLICITY	0.00	0.00		577,000.00	0.00	149,000.00	0.00	391,000.00	0.00	302,000.00	0.00	1,419,000.00
ICT MAINTENANCE	0.00	3,682,000.00		1,154,000.00	0.00	3,628,000.00	0.00	60,287,000.00	0.00	0.00	0.00	68,751,000.00
STUDENT COST	0.00	61,000.00	42,030,000.00	11,610,000.00	0.00	29,609,000.00	1,503,000.00	147,756,000.00	0.00	88,975,969.00	43,533,000.00	278,011,969.00
GRANT SOURCING & COLLAB EXPS	2,177,658.00	4,794,000.00		9,334,000.00	0.00	141,530,000.00	0.00	121,748,000.00	0.00	20,235,200.70	2,177,658.00	297,641,200.70
LAB CONSUMABLES	0.00	18,185,000.00		31,518,000.00	0.00	0.00	0.00	0.00	0.00	7,866,732.75	0.00	57,569,732.75
PROJECT ADMIN & OTHER EXPS	25,793,060.89	252,490,000.00	3,110,220.00	128,068,000.00	16,516,920.38	180,266,000.00	38,819,298.78	204,621,000.00	36,775,725.00	43,813,916.28	121,015,225.05	809,258,916.28
SCIENCE DIRECT			24,459,051.68	0.00	3,943,650.87	0.00	0.00	0.00	54,997,721.48	0.00	83,400,424.03	0.00
SUBSCRIPTION TO NgREN	0.00	0.00		0.00	78,618,000.00	0.00	82,975,000.00	0.00	160,257,800.00	0.00	321,850,800.00	0.00
TOTAL	63,672,365.23	312,576,000.00	116,840,105.34	385,366,000.00	152,270,202.77	1,192,801,000.00	445,409,729.43	1,659,045,000.00	373,147,968.88	354,839,723.29	1,151,340,371.65	3,904,627,723.29

SUMMARY OF INTERNALLY GENERATED REVENUES

S/NO.	DESCRIPTION	2021 (N)	2022 (N)	2023 (N)	2024 (N)	TOTAL (N)
1	Training	0.00	1,516,000.00	0.00	0.00	1,516,000.00
2	Bench fee	0.00	42,500.00	24,000.00	30,000.00	96,500.00
3	Sample analyses	3,207,000.00	0.00	0.00	0.00	3,207,000.00
	TOTAL	3,207,000.00	1,558,500.00	24,000.00	30,000.00	4,819,500.00

PUBLICATIONS – 2015-2025

Since its inception, over 500 publications have been generated through the Centre and those associated with it. These are listed for ease of reference and to support greater access and collaborations in the future



2015

1. Waespy, Mario, Thaddeus T. Gbem, Leroy Elenschneider, André-Philippe Jeck, Christopher J. Day, Lauren Hartley-Tassell, Nicolai Bovin, Joe Tiralongo, Thomas Haselhorst, and Sørge Kelm. (2015) "Carbohydrate Recognition Specificity of Trans-sialidase Lectin Domain from *Trypanosoma congolense*." *PLOS Neglected Tropical disease* doi: 10.1371/journal.pntd.0004120
2. Ibrahim, A.B. & Aragão, F. J. L (2015) RNAi-mediated resistance to viruses in genetically engineered plants. *Methods Mol. Biol.* doi: 10.1007/978-1-4939-2453-0_5.
3. Mansurah A. Abdulazeez, Sani Ibrahim, Danladi Amodu Ameh, Joseph O. Ayo, Luiz J.C.B. Carvalho, Jiradej Manosroi & Abdulrazak B. Ibrahim (2015) Bioassay-guided fractionation and antihypertensive properties of fractions and crude

extracts of *Peristrophe bicalyculata* (Retz) Nees *Acta Poloniae Pharmaceutica and Drug Research* PMID: 26642682

4. Ajumobi O, Sabitu K, Nguku P, Kwaga J, Ntadom G, Gitta S, Elizeus R, Oyibo W, Nsubuga P, Maire M, Poggensee G (2015))Performance of an HRP-2 rapid diagnostic test in Nigerian children less than 5 years of age *The American journal of tropical medicine and hygiene* [doi: 10.4269/ajtmh.13-0558](https://doi.org/10.4269/ajtmh.13-0558)
5. Bertu WJ, Ducrotoy MJ, Muñoz PM, Mick V, Zúñiga-Ripa A, Bryssinckx W, Kwaga JK, Kabir J, Welburn SC, Moriyón I, Ocholi RA (2015) Phenotypic and genotypic characterization of *Brucella* strains isolated from autochthonous livestock reveals the dominance of *B. abortus* biovar 3a in Nigeria. *Veterinary Microbiology* <https://doi.org/10.1016/j.vetmic.2015.08.014>
6. Abakpa GO, Umoh VJ, Ameh JB, Yakubu SE, Kwaga JK, Kamaruzaman S. (2015) Diversity and antimicrobial resistance of *Salmonella enterica* isolated from fresh produce and environmental samples. *Environmental Nanotechnology, Monitoring & Management*. <https://doi.org/10.1016/j.enmm.2014.11.004>
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