

**DEPARTMENT OF MICROBIOLOGY
AHMADU BELLO UNIVERSITY, ZARIA
ANNUAL REPORT: YEAR 2021**

INTRODUCTION

- **Faculty**

Department of Microbiology is domiciled in the Faculty of Life Science.

- **Programme**

The Department currently has four (4) programmes listed below.

- i. B.Sc. Microbiology
- ii. PGDM Microbiology
- iii. M.Sc. Microbiology
- iv. Ph.D. Microbiology

- **Number of staff by rank/ gender**

The Department has 59 number of staff members comprising of 29 Academic staff (Appendix I) and 30 Non Academic staff (Appendix II); 41 are male and 18 are female staff members. Out of this number, three (3) are on study fellowship while one (1) is awaiting his study fellowship approval. The number of staff by rank is shown in the Table below.

Rank	Number of Staff	Male	Female
Professor	7	5	2
Reader	4	4	0
Senior Lecturer	5	3	2
Lecturer I	2	1	1
Lecturer II	6	5	1
Assistant Lecturer	4	0	4
Graduate Assistant	1	0	1
Chief Technologist	4	2	2
Chief Confidential Secretary	1	0	1
Principal Technologist	5	5	0
Assistant Store Officer	1	1	0
Technologist I	4	2	2
Technologist II	1	1	0
Assistant Operations Manager	1	1	0
Senior Librarian	1	0	1
Higher Library Officer	1	0	1
Senior Assistant Technologist	1	1	0
Assistant Technologist	1	1	0
Senior Office Assistant II	2	2	0
Laboratory Assistant	7	7	0
Total No. of Staff	59	41	18

NUMBER OF STUDENTS (UNDERGRADUATE/ POSTGRADUATE) BY PROGRAMME/ GENDER

Undergraduate Programme

There are 765 students presently enrolled in the Undergraduate programme comprising of 329 male and 436 female students as listed below.

100 Level	142
200 Level	204
300 Level	170
400 Level	249
Male Undergraduate Students	329
Female Undergraduate Students	436

Postgraduate Programme

The Department currently has three (3) postgraduate programmes with 71 students comprising of 32 male and 39 female as listed below.

PGD Microbiology	15
M.Sc. Microbiology	46
Ph.D. Microbiology	10
Male Postgraduate Students	32
Female Postgraduate Students	39

MAJOR ACTIVITIES CONDUCTED AND ACCOMPLISHMENTS

▪ Academic Activities (Teaching/Researches/Publications/Collaborations/Curriculum review/Accreditation)

The Department is mainly involved in research works conducted by both undergraduates and postgraduate students which is part of the requirements for award of the various degrees. The title of the project research work carried out by the undergraduate students and their supervisors are listed in Appendix V. Similarly, the dissertations and thesis titles of the research work successfully defended externally by the postgraduate students and the members of the supervisory teams are listed in Appendices VI and VII.

Publications

There were quite a number of publications by staff members in the Department in 2021. These include peer reviewed journal articles and conference proceedings. Some of the articles that have been accepted for publications are included in this report. The name of staff in the Department are highlighted and underlined in the publications listed below.

Peer reviewed articles

1. Asmau Nna Sulaiman, Auwalu Halliru Arzai and Dalha Wada Taura. (2022). Ethnobotanical survey: A comprehensive review of medicinal plants used in treatment of gastro intestinal diseases in Kano State, Nigeria. *Phytomedicine Plus. Elsevier*, 2(1). 100180.

2. Omotola Justina, **Aminu Maryam** and Oguntayo Olanrewaju. (2021). Cervical Cancer Trend and Associated Risk Factors at a North-Western Nigerian Hospital. *EC Gynaecology*, 10 (3): 01-10
3. **Maryam Aminu**, Yakubu Irimiya Parason, Umar Abdullahi, Mohammed Ibrahim Tahir, Fatai Akindele Olaniyan and Mohammed Aminu Usman. (2021). Detection of Measles IgM and Malaria Parasite among Febrile Children in Zaria, Nigeria. *Journal of Infectious Diseases and Epidemiology*, 7 (1): 189
4. Mohammed Ibrahim Tahir, **Maryam Aminu**, **Ahmed Babangida Suleiman**, Ahmed Saraja Opaluwa, Abdurrahman El-Fulaty Ahmad, Abubakar Umar Anka. (2021). HIV-1 plasma RNA viral load and CD4 cell count in drug-naïve HIV-1 infected patients in Kaduna State, Nigeria. *Journal of Medicine in the Tropics*. 23: 46-51.
5. Ajang, A. Y., **Elijah, E. E.**, **Jatau, E. D.**, **Aminu, M.** and Longwap, A. S. (2021). Serologic Evidence of High-Risk Human Papillomavirus 16 and 18 Infections and Risk of Prostate Cancer in Northwestern Nigeria. *Journal of Medical Science and Clinical Research*, 9(4):130-139.
6. Nneoma Confidence JeanStephanie Anyanwu, **Ahmed Babangida Suleiman**, **Elijah Ekah Ella**, Haruna Makanjuola Kazeem and **Maryam Aminu**. (2021). Mutations in two neuroblastoma rat sarcoma oncogenes are associated with progression of haematologic malignancies in Nigeria. *Asia-Pacific Journal of Molecular Biology and Biotechnology*, 29 (2): 62-74.
7. Ibrahim Isa, Iliya Shehu Ndams, **Maryam Aminu**, Gloria Chechet, Andreas Dotzauerf, Ayo Yila Simon (2021). Genetic diversity of Dengue virus serotypes circulating among Aedes mosquitoes in selected regions of northeastern Nigeria. *One Health* (13) 1000348.
8. **Aminu M.**, Muhammed A., Magaji S.J., Olaniyan F.A., Usman M.A. and **Ella E.E.** (2021). Detection of Epstein-Barr virus Antibodies in Some Nigerian Women with Breast Lumps. *Achieve of Basic and Applied Medicine*, (9): 19-22.
9. **Aminu M.**, Bodam B.O., Olaniyan F.A., Usman M.A. and **Ella E.E.** Sero-prevalence of Herpes Simplex Virus Type-2 Among Patients Presenting with Fever at a Nigerian University Health Services. *Achieve of Basic and Applied Medicine*, (9): 39-44.
10. Akinyelure, E.O., **Machido, D.A.** and **Atta, H.I.** (2021). Efficacy of Bacillus thuringiensis isolated against tomato leaf miner (*Tuta absoluta*) larvae on tomato plants under screen house conditions. *Agricultural Science and Technology*, <https://www.agriscitech.eu>. DOI:10.15547/ast.2021.04000
11. **Atta, H.I.**, Mustapha, F., Goni, A.B., **Bishir, M.** (2021). Optimization of biomethanation by codigestion of municipal solid waste with domestic food waste and waste water sludge. *International Journal of Biomass and Renewables*, 10(2): 25–34.
12. Bamgbose, T., **Atta, H.I.** and Anupkumar, R.A. (2021). Bacteriocins of Lactic Acid Bacteria and Their Industrial Application. *Curr. Top. Lact. Acid Bact. Probiotics*, 7(1):1-13. <https://doi.org/10.35732/ctlabp.2021.7.1.1> ISSN 2287-853X
13. Akinyelure, E.O., **Machido, D.A.** and **Atta, H.I.** (2021). Molecular characterization of soil-dwelling Bacillus thuringiensis using transcriptional regulator, xre gene and the crystal protein, cry2 gene. *UMYU Journal of Microbiology Research*. <https://doi.org/10.47430/ujmr.2161.017>.
14. **Atta, H.I.**, Idris S.M., Gulumbe, B.H. and Awoniyi, O.J. (2021). Detection of extended spectrum beta-lactamase genes in strains of Escherichia coli and Klebsiella pneumoniae isolated from recreational water and tertiary hospital waste water in Zaria, Nigeria. *International Journal of Environmental Health Research*. DOI: 10.1080/09603123.2021.1940884

15. Ogujoifor, I.F., **Machido, D.A.** and **Atta, H.I.** (2021). Effect of the application of goat dung on the bioremediation of polluted soil by hydrocarbon degrading bacteria: A Microcosm study. *FUDMA Journal of Sciences*, 5(1):278-287.
16. **Atta, H.I.** and Umar, F.F. (2021). Prevalence of otitis media in children attending a primary health care centre in Samaru, Zaria, Nigeria. *Ife Journal of Science*, 23(1):123-130.
17. Tajudeen, Y.A., Oladunjoye, I.O., **Atta, H.I.** and Oyediji, K.E. (2021). CRISPR-Cas Systems: A potential tool to reduce the global burden of antimicrobial resistance. *Bacterial Empire*, 4(2):e273.
18. **Suleiman, A.B.**, **Hussaini, I.M.**, **Anchau, Z.G.** and **Sulaiman, M.A.** (2021). Antibiotic Resistance Trend of Uropathogenic Klebsiella pneumoniae in a Hospital in Abuja, North Central Nigeria, 2014-2015. *Nigerian Journal of Microbiology*, 35(1): - 5477 - 5483.
19. **Suleiman, A.B.**, **Hussaini, I.M.**, Odumosu, B.T. and Abubakar, W.O. (2021). Characterization and Serotyping of *Pasteurella multocida* isolated from Deep Litter and Free-range Chickens in Vom, Plateau State, Nigeria. *Nigerian Journal of Microbiology*, 35(1): - 5576 -5585.
20. **Hussaini I.M.**, AbdulAzeez H., Gide S., Anas G., **Musa B.** and Sheriff W. (2021). Comparative Performance of Biogas Production using Water melon, Orange and Banana Fruit Wastes. *Dutse Journal of Pure and Applied Sciences (DUJOPAS)*, 7(1): 131-139
21. Gide S, Alegbe S.D, **Hussaini I.M.**, Ibrahim Y., Sheriff, W., Musa, B., Anas G and Aliyu A. (2021). Levels of aflatoxin M1 among breastfeeding mothers and infants attending Yobe State Specialist Hospital Damaturu Yobe State, North-eastern Nigeria. *Dutse Journal of Pure and Applied Sciences (DUJOPAS)*, 7(1): 160-170
22. K. Kuti, **I.M. Hussaini,** A. Usman, A. Isa. (2021). Isolation of Lactobacillus species from fermented Parkia biglobosa seed and screening for their probiotic activity. *Agricultural Science and Technology*, 13(2): 212-216.
23. Kiru, M.U., Belaton, B., Xingying C., **Aminu M.**, Abubakarr, B. S. (2021). A proposed Framework for Pandemic Control Using Artificial Intelligence: A case Study of COVID-19 Global Pandemic. *The Journal of Computer Science and its Application*, 28(1): June 2021. <https://dx.doi.org/10.4314/jcsia.v28i1.11>.
24. **Sulaiman, M.A.**, Aminu, M., Ella, E.E. and Abdullahi, I.O. (2021). Prevalence and Risk Factors of the Novel Escherichia albertii among Gastroenteritis Patients in Kano State, Nigeria. *Journal of Medicine in the Tropics*, 23:39-45. DOI: 10.4103/jomt_34_20. Journal base: University of Jose. Publishers: Wolters Kluwer-Medknow

Articles in Press

25. Abdulrahman, A., Iliyasu, M.Y., Na'Allah, A.J., Bashir, I.O., **Madika, A.**, Shamsiyya, M.S., and Umar, A.F. (2021). Screening of Soil Fungi for Cellulase Production using Carboxymethyl Cellulose Media. *Path of Science*, (In press).
26. Afegbua, S.L., Batty, L.C., Renshaw, J., Hilton, S. Bending, G. (2021). Critical controls of vegetation, PAH contamination and time on soil microbial community structure during phytoremediation. NISEB. (In Press).
27. 2. Afegbua, S.L. Sani Y.M. and Jones, A. (2021). Phylogenetic characterization and detection of novel polyketide synthase type I and nonribosomal peptide synthases genes in Micromonospora strains isolated from Chilean marine sediments. *UMYU Journal of Microbiology Research* (in press).

28. 3. Afegbua, S.L., Batty, L.C., Renshaw, J. Presence of priority polycyclic aromatic hydrocarbons, chromium, copper and lead in two selected brownfield sites in the United Kingdom. *Journal of Applied Science and Environmental Management (JASEM)* (in press).

Conference Proceedings

1. **Maryam Aminu** (2021). Human Papilloma Viruses and Cervical Cancer: Prevention and Control. *Proceedings of the 15th Annual Conference of Fulbright Alumni Association of Nigeria (FAAN)*. Pp.122-133.
2. **Maryam Aminu** (2021). Burden of Hepatitis B Virus Infection in Nigeria: A Growing Concern. *Proceedings of the 15th Annual Conference of Fulbright Alumni Association of Nigeria (FAAN)*. Pp.134-148.
3. Z. Augustine, B. G Bajoga, K. M Lam, **M. Aminu**, A. M. S Tekanyi, S. M Sani, A. D Usman, A.S Yaro, H. Bello, E.E Agbon and O.O Umeonwuka (2021). Recent Paradigm on Viruses Ground Zero Source Prediction using Integrated using Integrated-Hybridized Nano Biosensors Induced by Terahertz Frequency. *Proceedings of the First International Conference on Data Science & Engineering (ICDSE 21)* held 6th – 8th December 2021 at the Air Force Institute of Technology, Kaduna.

Conferences Papers

1. **Dr. I. M. Hussaini**. Presented a paper Performance Evaluation of Three Phenotypic Tests in the Detection of Carbapenemases in *Enterobacteriaceae*. *A paper presented at the First World Microbe Forum 2021 and the First International e-conference on Microbiology: COVID -19 and current Issues*
2. **Dr. I. M. Hussaini**. Molecular detection and characterization of carbapenemases among carbapenem resistant *Escherichia coli* and *Klebsiella pneumoniae* isolated from urine. *A paper presented at the 1st International E-conference on Microbiology: COVID-19 & Current Issues organized by Department of Microbiology, Primeasia University, Dhaka, Bangladesh.*
3. **Shaibu, A.M., *Aminu, M., *Abdullahi, I.O. and *Ella, E. E.** Electropherotypes of Rotaviruses Detected in Children under Five Presenting with Gastroenteritis in North-western Nigeria. An oral paper presented at the African Virology Congress Held at Ange Hill Hotel, East Legon, Accra, Ghana 3rd – 4th November, 2021.
4. **Aminu, M.,** Muhammed, A. and Usman, M.A. (2021). Detection of Epstein-Barr virus Antibodies among Women with or without Breast Lumps in Zaria, Nigeria. An oral paper presented at the 54th Annual (Hybrid) Conference and 60th Anniversary Celebration of the Science Association of Nigeria. 20th -24th June, 2021. Pp 78.
5. **Guest Speaker: Aminu Maryam.** Coronavirus Disease 2019 Vaccination: Relevant Issues. African Virology Congress (AVC) 2021 held in Ange Hill Hotel, East Legon, Accra, Ghana from 03-04 2021.
6. **Abubakar Madika,** Matthew Lau, Lili Sheng, Ying Zhang and Nigel P. Minton (2021). Engineering *Parageobacillus thermoglucosidasius* NCIMB 11955 for Bioethanol Production using Theophylline-responsive CRISPR/Cas9 System. Paper Presented at the School of Life Sciences Postgraduate Researchers Conference, The University of Nottingham, United Kingdom, 12th – 16th July 2021. p72,
7. **Asmau Nna SULAIMAN,** Murjanatu Abdullahi MUHAMMAD, Maryam ABDURRAZAQ. (2021). Perception of Postgraduate Diploma in Education Students on food safety among food

- handlers in fastfood restaurants in Zaria. 1st Annual Symposium of the Biotechnology Society of Nigeria, Kaduna State University (KASU), 7th- 9th July, 2021. P20.
8. Muhammad, M.A., Olorunniyi, E.T., Abdurrazaq, M., **Sulaiman, A. N.**, and Abubakar, S.C. (2021). Production of Bio surfactant by *Bacillus* species isolated from Hydrocarbon contaminated soil in Samara, Zaria, Kaduna State. 1st Annual Symposium of the Biotechnology Society of Nigeria, Kaduna State University (KASU), 7th- 9th July, 2021. P20.
 9. **Sulaiman, A.N.**, Ameh, J.B., Inabo, H.I. (2021). Viability of clinical *Staphylococcus aureus* and *Staphylococcus aureus* ATCC 25923 under different preservation methods. 43rd Scientific Conference and Annual General Meeting, University of Port Harcourt (UNIPORT), 6th – 10th September, 2021. P157
 10. **Sulaiman, M.A** American Society for Microbiology in Collaboration with Federation of European Microbiological Societies-World Microbe Forum (Online), 20th-24th June, 2021.

Collaborations

The Department as mandated by the Directorate of Academic Planning and Monitoring is making preparation to mount a B.Sc. programme in Water Sanitation and Hygiene. This will be in collaboration with the National Water Resources Institute, UNICEF, Water Aid and Pan African Vision for the Environment. The Department has identified the resource persons, the departments to collaborate with and requirements for mounting the programme.

Dr. S. L. Afegbua received the Cambridge- Africa ALBORADA research grant (October, 2021) to conduct a research titled “Feeding of the freshwater oyster (*Etheria elliptica*) on microplastic pollution in Nigeria: risks to human health, threats to biodiversity, and novel tools for environmental management” in collaboration with Prof David Aldridge of the Department of Zoology, University of Cambridge, UK.

Prof. Maryam Aminu is collaborating with researchers from Kenya, South Africa, and Ghana on a research titled, ‘Host and virus factors, immune responses, and drug discovery against Epstein Barr Virus (EBV) infection and EBV-induced cancers in sub-Saharan Africa’ for a Wellcome-Trust Grant. The Principal Investigator is Prof Osbourne Quaye of the West African Center for Cell Biology of Infectious Pathogens, University of Ghana.

Prof. Aminu, in collaboration with the Department of Obstetrics and Gynecology of Ahmadu Bello University Teaching Hospital has successfully supervised Dr. Adeola Bintu Fatimah Bakare’s M.Sc. research dissertation titled, ‘Characterization of Oncogenic Human Papillomavirus among Women with Cervical Cancer Attending Ahmadu Bello University Teaching Hospital, Zaria.

Dr. H. I. Atta has collaborations with the School of Environmental and Biological Sciences, Rutgers University, New Brunswick, New Jersey, U.S.A

COMMUNITY SERVICE

Production of Facemasks and Hand sanitizers

The Department produced customized face masks and alcohol-based hand sanitizers which were graciously donated to students, staff and individuals within the University community.

Some of the community services members of staff were involved in during the year are mentioned below.

Fellowship

Dr. H. I. Atta appointed as Fulbright Visiting Scholar (2020/2021) at Rutgers University, New Jersey, United States of America.

1. AWARDS AND RECOGNITION (STAFF AND STUDENTS)

Awards received by staff members

Some of the awards received by some members of staff are as follows:

- i. **Dr. I.M. Hussaini** awarded Outstanding Performance in the Poster Presentation Session Under The Category “Clinical Microbiology & Antimicrobial Resistance” - **2nd Place** World Microbe Forum 2021 with theme: COVID-19 and current Issues. **Title of paper:** Molecular detection and characterization of carbapenemases among carbapenem resistant *Escherichia coli* and *Klebsiella pneumoniae* isolated from urine
- ii. **Prof. Maryam Aminu** given an Award of Excellence: As an Icon of Humanitarian Services by the Born and Bred in Zaria Foundation on Saturday 11th of December 2021;
- iii. **Prof. Maryam Aminu** Awarded a Certificate of Service as Assistant Secretary General by Ahmadu Bello University Alumni Association. 19th August, 2017 – 27th February, 2021 - February 2021;
- iv. **Prof. Maryam Aminu** awarded the Fulbright Alumni Association of Nigeria (FAAN) Certificate of Merit in recognition of outstanding impact on the society and unflinching support to the development of the Association - 2021.

Grants and Waivers received by staff members

Some staff members that have received travel grants and waivers are listed below:

- i. **Dr. I.M. Hussaini** - Received the Bill and Melinda Gates Foundation Travel grant Award for Scientists from Low and Low-Middle Income Countries for the World Microbe Forum 2021 E-conference. **Title of paper:** Performance Evaluation of Three Phenotypic Tests in the Detection of Carbapenemases in *Enterobacteriaceae*.
- ii. **Sulaiman, M.A.-Received** Post-Doctoral and Student Travel award for the World Microbe Forum 2021 E-conference.
- iii. **Dr. S.L. Afegbua** - Received:
 - a- the Cambridge-Africa ALBORADA research grant. October, 2021.
 - b- the Orange Knowledge Programme (OKP) Scholarship for short course on Solid Waste Management at IHE Delft Netherlands.
 - c- 90% registration discount by London School of Hygiene and Tropical Medicine to participate in online course on ‘Antimicrobial Resistance: an interdisciplinary Approach’
 - d- full registration waiver by African Society for Medical Laboratory Science (ASLM) to participate in ASLM conference 2021.

Recognitions

- i. **Dr. M. A. Shaibu** appointed as Technical officer at the mock Examination for Joint Admissions and Matriculation Board held at Hadiza Sharu House, Laila Buhari Street, UDB Road, Tarauni, Kano, Kano State, Nigeria. May, 2021.
- ii. **Prof. Maryam Aminu** appointed as the Secretary of the Programme Management Committee to the African Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA).
- iii. **Dr. M. A. Shaibu** as Technical officer at the Joint Admissions and Matriculation Board, Main Examination which held at White House Computers Limited, Kakuri-Kaduna, Kaduna State, Nigeria. June 2021.
- iv. **Dr. H. I. Atta** appointed as the Monitoring Officer for National Examinations Council (NECO) (2021).

PROSPECTS

The Department hopes to host a B.Sc. Water Sanitation and Hygiene Programme in collaboration with the National Water Resources Institute, UNICEF, Water Aid and Pan African Vision for the Environment, which is to take off soon. There is also a proposal to introduce new postgraduate programmes with a view to generating funds for the Department in particular and the University at large. Additionally, the Department is proposing to establish a culture bank as well as consultancy services to further enhance its capacity in terms of revenue generation internally. The Department is in the process of floating a Journal named, West African Journal of Microbiology (WAJM) whose maiden edition will be out hopefully by the end of January 2022.

CONCLUSION

The Department would like to appreciate the management for the timely release of the operating expenses, though inadequate, and wish that all other allocations could be released to the Department to ease her difficulties and for smooth running. We would also wish to draw the attention of the University management to the fact that, our ability to ensure effective and smooth conduct of affairs of the Department is severely threatened by shortage of fund. To this end, we appeal to the management to consider coming to our rescue.

Prof. Maryam Aminu
(Head of Department)
December 23rd 2021