

# RASHIDATU ABDULAZEEZ

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**Nationality:** Nigerian

## PROFILE

Evolutionary geneticist and ecotoxicologist investigating how environmental toxins shape population dynamics, evolutionary processes, and disease aetiology, using *Drosophila* as a model. Experienced in independent and collaborative research, lab setup and management, and supervision of student projects. Strong commitment to science communication and equitable capacity-building in Africa through *Drosophila*-based teaching and research outreach.

- Research strengths: population genetics, host–microbe interactions, endogenous viral elements (EVEs), environmental toxicology, behavioral genetics, molecular biology.
- Supervision: Primary/co-supervision of 50+ undergraduate projects and 3+ postgraduate students (official records).
- Communication and outreach: Extensive national and international engagement on *Drosophila* in education and biomedicine.

## SELECTED ACHIEVEMENTS

### 1. Built A.B.U.'s First *Drosophila* laboratory and Nigerian Stock Center

- Designed and established Ahmadu Bello University's first *Drosophila* research laboratory and a national stock center of Nigerian wild type strains, including facility setup, SOP development, sourcing and maintaining exotic *D. melanogaster* strains from collaborators in Europe, and user training. Characterized local *Drosophila melanogaster* populations for research use, enabling over 50 undergraduate and 3 postgraduate projects. This work supported more than 10 manuscripts, new collaborations, and successful funding bids, including TETFund and IBR.

### 2. Established and Strengthened *Drosophila* Laboratories Across Nigeria

- Established two *Drosophila* laboratories and provided technical leadership and mentorship that assisted in the establishment of 3+ additional *Drosophila* labs in Nigerian universities and research centers. This created a growing national network for genetics, ecotoxicology, and neuroscience research using *Drosophila* as a model system.

### 3. Advancing Ecotoxicology using *Drosophila* Models

- Developed simplified behavioral, and physiological assays in *Drosophila melanogaster*, to investigate the effects of ecotoxins such as Lead Acetate and food additives. Generated *in vivo* evidence of toxicity mechanisms and mitigation strategies, including resveratrol mediated rescue of lead induced defects, leading to publication in Environmental Toxicology and Pharmacology (2024).

#### 4. Advancing Endogenous Viral Element Discovery in Drosophilidae

- Implemented and initiated a comparative genomics pipeline for detection and curation of endogenous viral elements across Drosophilidae, integrating population genetic context during postdoctoral research in Edinburgh. Early outputs were presented at the BBSTEM Meeting (2025), with an annotated resource now being built to support manuscripts and future grant applications.

#### 5. Delivering Pan-African Capacity Building Through Drosophila and STEM Programmes

- Founded and led Droso4Nigeria and BloSTEMEI, and contributed to BioRTC and DrosAfrica initiatives as a trainer and outreach member, addressing limited access to practical model organism training across Africa. Contributed to DrosAfrica's online workshop: led a panel discussion and adapted Drosophila assays protocols into affordable research materials. Also delivered teacher trainings and outreach in secondary schools, institutionalizing recurring programmes and earning recognition, including the Yobe State Governor's Award (2022).

#### 6. Contributing to High Impact Collaborative Genomics Research

- Contributed to a multi-institution collaboration investigating mutation, recombination, and transposition rates in Drosophila. This work resulted in co authorship of a Genome Research paper (2023), providing foundational parameters for population genomics studies.

#### 7. Advancing Neuroscience Research Capacity in Africa Through Collaborative Scholarship

- Contributed to a large multi author study examining the use of simple model organisms for neuroscience research across Africa. This work highlighted gaps and opportunities in continental research capacity and resulted in publication in Molecular Psychology: Brain, Behavior, and Society (2024), strengthening visibility of African neuroscience and interdisciplinary collaboration.

#### 8. Scaling Teaching and Postgraduate Supervision in Biology

- Taught nine Biology and Zoology modules to over 2,000 students while coordinating postgraduate seminars and embedding Drosophila practical into modules. Supervised more than 50 undergraduate and 3 postgraduate projects, strengthening practical competencies and building a sustainable research pipeline.

#### 9. Securing Competitive Research and Capacity Building Funding

- Led and contributed to successful grant applications as PI and Co I across national and international schemes including NIF, SGCI TETFund, TWAS DFG, FlyBase, TRenDinAfrica, DrosAfrica, and TETFund IBR. These awards enabled new assays, infrastructure development, national and international trainings, wide dissemination, and collaborations.

#### 10. Driving translational innovation through renewable energy solutions

- Co invented and filed a patent with a multidisciplinary team for AIRVOLT, a vertical axis wind turbine system designed to deliver reliable power to off grid and underserved primary health care centers. The invention is protected under patent reference RP: NG/PT/NC/O/2025/18375, demonstrating commitment to translating research into scalable solutions for health and development challenges.

### CURRENT APPOINTMENT

- i. Postdoctoral Research Associate, Institute of Ecology and Evolution, School of Biological Sciences, University of Edinburgh, UK (**Jan 2025 – present**)
  - Project: Fundamental questions on endogenous viral elements in *Drosophilidae*.
- ii. Research Scientist and Lecturer, Department of Zoology, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria (**Mar 2019 – present**)

- Activities: *Drosophila* genetics and ecotoxicology; lab and stock center management; teaching at UG/PG level; supervision; outreach; publications.

## EDUCATION

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- i. PhD, Zoology, Ahmadu Bello University, Zaria, Nigeria (**Sept 2021**)
  - Thesis: Genetic characterization and molecular detection of *Drosophila melanogaster* and *Wolbachia pipientis* in ecological zones of Nigeria.
- ii. MSc, Biology, Ahmadu Bello University, Zaria, Nigeria (**Mar 2017**)
  - Dissertation: Genetic diversity in natural populations of *Drosophila melanogaster* (Meigen, 1830) from savanna zone of Nigeria using microsatellite markers.
- iii. PGDE, Education, National Teachers' Institute, Kaduna, Nigeria (**Dec 2014**)
  - Project: Effect of laboratory facilities on students' academic performance in Biology of selected federal and state government schools in Sabon-Gari LGA, Kaduna State, Nigeria.
- iv. BSc, Biology, Ahmadu Bello University, Zaria, Nigeria (**Nov 2012**)
  - Project: Effects of potash and onions on cooking time and the nutritional and anti-nutritional composition of brown eyed cowpea (*Vigna unguiculata*).

## PUBLICATIONS

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### Peer Reviewed Journal Articles

1. Hamidu, S. K., Umar, A., Abdulazeez, R., Muhammad, Z., Alkhamis, A. I., Umar, M., ... Maina, M. B. (2024). Simple models for neuroscience research discoveries: how often are these models used in Africa? *Molecular Psychology: Brain, Behavior, and Society*, 2:20. <https://doi.org/10.12688/molpsychol.17511.2>
2. Abdulazeez, R., Highab, S., Onyawole, U., Jeje, M., Musa, H., Shehu, D., & Ndams, I. S. (2024). Co-administration of resveratrol rescued lead-induced toxicity in *Drosophila melanogaster*. *Environmental Toxicology and Pharmacology*, 109, 104470 <https://doi.org/10.1016/j.etap.2024.104470>
3. Wang, Y., McNeil, P., Abdulazeez, R., Pascual, M., Johnston, S. E., Keightley, P. E., & Obbard, D. (2023). Variation in mutation, recombination, and transposition rates in *Drosophila melanogaster* and *Drosophila simulans*. *Genome Research*, 33, 1–14. <https://www.genome.org/cgi/doi/10.1101/gr.277383.122>
4. Abdulazeez, R., Yusuf, H., Suleiman, H. O., & Shehu, D. M. (2023). Nutritional composition of Semolina Jaggery diet and its effect on reproductive fitness of Harwich strain *Drosophila melanogaster*. *Journal of Applied Science and Environmental Management*, 27(8), 1639–1643.
5. Sadiq, I. Z., Katsayal, B. S., Abdulazeez, R., Adediyin, O. S., Omengwu, Y. F., & Usman, A. G. (2023). Peptides from casein extend the survival rate and protect *Drosophila melanogaster* from oxidative stress via ineracting with the Keap1–Nrf2 pathway. *Jordan Journal of Biological Sciences*, 16(2), 297 <https://doi.org/10.54319/jjbs/160214>

- i. Agi, A.M., **Abdulazeer, R.**, Dakup, T.N., Al-hassan, N.A., Abdulfatahi, O.H., Wada, Y. and Shehu, D.M. (2025). Molecular mechanisms of anti-diabetes effects of *Mormodica charantia* L. Ethanolic leaf extract on type 2 diabetes in strains of *Drosophila melanogaster* Meigen, 1838. *bioRxiv preprint*. doi: <https://doi.org/10.1101/2025.08.11.669659>
- ii. **Abdulazeer, R.**, M.O. Akhadelor, M.T. Gbadamosi, A.O. Iyeola-Tunji, D.M. Shehu and I.S. Ndams (2022). Implication of population density on biodiversity of human-commensal *Drosophila* species in Nigeria. *Research Square preprint*. <https://doi.org/10.21203/rs.3.rs-1534375/v1>

## Other (National Journals/ Outputs)

- i. Suleiman, H.O., Mohammed, A., Tanko, Y., Kawu, M.U., **Abdulazeer, R.** and Suleiman, M.O. (2024). Dietary Calabash Chalk Induces Decline in Reproductive Fitness in Harwich Strain of *Drosophila melanogaster*. *Nigerian Journal of Scientific Research*, **23**(1): 155-162. ISSN-0794-0378 *journal.abu.edu.ng*; <https://njsrabuzaria.com.ng>
- ii. Ibrahim, A.B., **Abdulazeer, R.** and Ishaq, F.M. (2021). Species Composition, Abundance and Bait Preference of Fruit Flies in Domestic and Wild Habitats in Ahmadu Bello University Main-Campus and Environs, Zaria-Nigeria. *Nig. J. of Wildl. Mgt.* **5** (2): 20-27. ISSN 2735-928x
- iii. **Abdulazeer, R.** and Prokop, A. (2020). How Fruit Flies Can Boost Life and Biomedical Sciences in Nigeria. <https://www.yenlive.com/news/index.php/opinion/3158-video-how-fruit-flies-can-boost-life-and-biomedical-sciences-in-nigeria>
- iv. **Abdulazeer, R.**, Ndams, I.S., Shehu, D.M. and Auta, J. (2019). Genetic Variability in Populations of *Drosophila melanogaster* Across Nigerian Savanna Zones. *FUDMA J. Sci.* **3** (4): 169-175
- v. **Abdulazeer, R.**, Akhadelor, M.O., Danazumi, I.B., Aliyu, A., Bayero, U and Auta, J. (2018). Effect of Potash and Onion on the Nutritional and Anti-Nutritional Composition of Cooked Brown-Eyed Cowpea. *FUDMA J. Sci.* **3**(1): 381-386
- vi. **Abdulazeer, R.**, Auta, J., Shehu, D.M., Ndams, I.S., and Umar, A.U. (2016). Determination of Genetic Similarities in Natural Populations of *Drosophila melanogaster* in Savanna Zone of Nigeria Using Microsatellite Markers. *Molecular Biology*. **5**: 177. Doi: 10.4172/2168-9547.1000177

## SELECTED CONFERENCE PAPERS & ABSTRACTS

1. Agi, A. M., **Abdulazeer, R.**, Abdulasalam, N., Omobalaji, M. B., Suleiman, O. H., & Shehu, D. M. (2025). *Momordica charantia* prevents reproductive and neurological dysfunctions in *Drosophila melanogaster* models of type 2 diabetes. Zoological Society of Nigeria 18th Annual Conference, University of Ibadan, Nigeria (Abstract, p.112).
2. **Abdulazeer, R.**, et al. (2024). Enhancing biology education in Nigeria: Use of *Drosophila* as an effective teaching and learning aid. The Allied Genetics Conference (TAGC), National Harbor, Washington, DC (Abstract, p.68).
3. **Abdulazeer, R.**, et al. (2023). Co administration of resveratrol rescued lead induced toxicity in *Drosophila melanogaster*. Science Association of Nigeria 55th Annual Conference, ABU Zaria (Abstract, p.20).

4. **Abdulazeez, R.**, et al. (2022). Methanol leaf extract of *Carissa edulis* affects reproductive fitness of *Drosophila*. Midwest *Drosophila* Conference, Indiana University, USA (Abstract, p.29).
5. **Abdulazeez, R.**, et al. (2021). Nigerian Sudan Savanna: An ancestral abode for wild populations of *Drosophila melanogaster*. Genetics Society of Nigeria, Book of Proceedings, 55–64.

*Additional abstracts from 2016–2019 available on request.*

## INVITED TALKS

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- i. Building generational capacity for fundamental research in Nigeria using *Drosophila*: Insights from personal experience. INSTAL Africa, Rwanda (Jul 2025)
- ii. Viral fossils in fruit flies: Clues to combating viral diseases in humans. Flash talk, Career Development Symposium, Black British Professionals in STEM (BBSTEM), Royal Society, London, UK (Jul 2025)
- iii. Empowering science education and research in Nigeria through *Drosophila*. Manchester FlyFacility - Prokop Lab, University of Manchester, UK (Jun 2025)
- iv. Story of a Researcher (podcast). Science Communication Hub, BioRTC, Yobe State University, Nigeria (Jun 2024)
- v. Understanding the reproductive system. Science and Technical Week, Government Secondary School, Zaria (Jun 2023)

## GRANTS, FELLOWSHIPS, & AWARDS

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- NIF Research Fellowship Grant (2024)
- SGCI–TETFund Research for Impact Grant (2024)
- TWAS–DFG Cooperation Visit Award (2024)
- TAGC Registration Support for Global Scientists Award (2024)
- FlyBase *Drosophila* Outreach Support Grant (2023)
- TReND in Africa Teachers’ Training Support Grant (2022)
- DrosAfrica High School Outreach Support Grant (2022)
- Appreciation Award by the Executive Governor of Yobe State (2022)
- Virtual Chair Award, Midwest *Drosophila* Conference, USA (2022)
- TETFund Institutional Based Research Grant (2021)
- Best Presenter Award, 44th Annual Conference of the Genetics Society of Nigeria (2021)
- DrosAfrica High School Outreach Grant (2020)
- Exemplary Volunteer, Abdullahi Muhammad Public Library, ABU Zaria (2019)
- Best Student in Biogeography, Dept. of Biological Sciences (2011)
- Kaduna State Undergraduate Scholarship (2009)
- Honours of Academic Excellence (Biology, Agricultural Science, Islamic Studies), Demonstration Secondary School, A.B.U. Zaria (2006–2007)

## TEACHING

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- Undergraduate and postgraduate teaching (2019 – 2024): Nine Biology/Zoology modules to >2,000 students across levels.

- Contributions include curriculum delivery, assessment, laboratory practicals, and project supervision

## **SUPERVISION & MENTORING**

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- Undergraduate projects: 50+ supervised (primary/co-supervisor).
- Postgraduate students: 3+ officially supervised/co-supervised.
- Mentorship: Research design, methods, analysis, scientific writing, and career development.

## **TRAINING, WORKSHOPS, & SHORT COURSES**

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- Leadership Effectiveness Training, Imperial College/Royal Society, London, UK (2025)
- R for Biologists, Edinburgh Genomics, University of Edinburgh, UK (2025)
- Linux for Bioinformatics, Edinburgh Genomics, University of Edinburgh, UK (2025)
- Faculty roles at multiple national capacity building programmes (Droso4Nigeria, BioRTC, DrosAfrica; 2018–2024).

*Additional items available in full list (below in Outreach & Engagement).*

## **RESEARCH SKILLS**

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- Molecular and behavioural biology: PCR (primer design, optimisation, multiplex PCR, RT qPCR); agarose and polyacrylamide gel electrophoresis; confocal/fluorescence/stereo microscopy; *Drosophila* identification, dissection, and fly pipelining; Ctrax for behaviour analysis.
- Computational: Statistical analysis with GenAlEx, MEGA, Cervus, STRUCTURE, R; Linux; Microsoft Office.
- Professional: Scientific writing, grant/report writing; science communication; student mentorship; team leadership; strategic planning

## **PROFESSIONAL MEMBERSHIP**

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- Society for Molecular Biology and Evolution (SMBE)
- Science Association of Nigeria (SAN)
- Genetics Society of Nigeria (GSN)
- Zoological Society of Nigeria (ZSN)

## **LEADERSHIP & SERVICE**

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- Founder & Executive Director, BloSTEMEI (2025 - present)
- Assistant Director; Head, *Drosophila* & Neurogenetics Unit, VANTRC, A.B.U. Zaria (2024 - present)
- Research Fellow, BioRTC, Damaturu (2023 - present)
- Postgraduate Seminar Coordinator, Dept. of Zoology, A.B.U. Zaria (2022 - 2024)
- Principal Investigator, *Drosophila* & Neurogenetics Lab, Dept. of Zoology, A.B.U. Zaria (2021 - present)
- DrosAfrica Nigerian Outreach Fellow (2019 - present)
- Laboratory Manager, *Drosophila* & Neurogenetics, Dept. of Zoology, A.B.U. Zaria (2019 - 2022)
- Founder, Droso4Nigeria (2018 - present)



- Programme Manager, FIRAT, Ibadan (2018 - 2019)

*Earlier leadership roles from primary school onwards (details available on request)*

## SELECTED OUTREACH & PUBLIC ENGAGEMENT

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- Leaders in Science (LiSScotland) – Volunteer Scientist (2025–2026)
- DNA Hunting, Primary Schools (West Lothian and Gala), Edinburgh (Apr–Jun 2025)
- BioScience Quarter Week – High Schools, Craigmillar, Edinburgh (Mar 2025)
- Faculty at BioTRC summer schools in Nigeria (2022–2024).
- Organiser/faculty for teacher training (Droso4Nigeria) (2022–2024).
- Coordinator, 1st North West Brain Bee Quiz Competition for Secondary Schools, ABU Zaria (Mar 2022)
- Extensive school outreach introducing Drosophila as a cost-effective teaching tool (2018–2024)

*A comprehensive, date ordered list of outreach and workshops is available upon request.*

## SELECTED CONFERENCE PARTICIPATION

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- 28<sup>th</sup> EDRC Conference, Alicante, Spain – Participant (2025)
- 5th Teaching and Learning Conference, University of Edinburgh – Participant (2025)
- 6th Scottish Fly Meeting – Poster Presenter (2025)
- The Allied Genetics Conference (TAGC), National Harbor – Presenter (Virtual, 2024)
- Science Association of Nigeria 55th Annual Conference – Presenter (2023)
- Midwest Drosophila Conference, Indiana – Presenter (Virtual, 2022)
- Genetics Society of Nigeria 44th Annual Conference – Presenter (2021)
- African Society of Drosophila Research 1st Annual Conference – Presenter (2019)
- Genetics Society of Nigeria 42nd Annual Conference – Presenter (2018)
- Society of Neuroscientists of Africa – Presenter (2017)
- Neuroscience Society of Nigeria – Presenter (2016)

## HUMANITARIAN & COMMUNITY ORGANIZATIONS

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- Founder & Executive Director, BloSTEMEI (<https://www.blostemei.org>)
- Founder, Droso4Nigeria (<https://www.droso4nigeria.wordpress.com>)
- Schools and Community Outreach Fellow, DrosAfrica (<http://drosafrika.org/members>)
- Alumnus, TReND in Africa (<https://www.trendinafrica.org>)
- Fellow, African Science Literacy Network (<https://www.africanscilit.org/fellows>)

## HOBBIES AND INTERESTS

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Outreach design and delivery, volunteering, knitting, cooking, travelling

## REFEREES

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1. Prof. Darren Obbard  
Professor of Evolutionary Genetics, Institute of Ecology and Evolution, University of Edinburgh, UK  
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Relationship: Academic Mentor

2. Prof. Iyiola Tunji  
Population Genetics, Livestock and Fisheries Department, N.A.E.R.L.S, Ahmadu Bello University, Nigeria  
Email: [tunjiyiola@yahoo.com](mailto:tunjiyiola@yahoo.com) | Tel: +234 703 423 4136  
Relationship: PhD Supervisor
3. Prof. Andreas Prokop  
Professor of Genetics, Faculty of Biology, Medicine & Health, University of Manchester, UK  
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Relationship: Public Engagement Mentor
4. Dr Damilola Momodu  
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Relationship: Academic Mentor