

Priming the future leaders for scientific and technological exploits: Zikas International School, Kaduna, Nigeria, welcomes PEAN for the Science Incubation Project

Kenneth Bitrus David

(Kaduna State University, Nigeria and Pharmafluency Education Advancement Network (PEAN), Nigeria)

Godwin Gajere Bitrus

(Pharmafluency Education Advancement Network (PEAN), Nigeria and Hyenang Pharmaceutical Ltd, Nigeria)

Elijah Sunom Umaru

(Kaduna State University, Nigeria and Pharmafluency Education Advancement Network (PEAN), Nigeria)

The Pharmafluency Education Advancement Network (PEAN), a Nigerian youth-led organization aimed at promoting access to quality education, organized a science outreach program for high school students dubbed Science Incubation Project (SIP) 1.0. The outreach event was sponsored by the Biochemical Society, UK, and had the participation of PEAN committee members, school staff, media reporters and 136 students. The objective of the outreach event was to ignite a passion for science among the students and improve their reading culture and mentorship and encourage a healthy lifestyle. The program involved two experiments: making DNA bracelets and the Dice Roll Choices game of epigenetics, which demonstrated the impact of lifestyle choices on genetic labelling.

Some members of PEAN were welcomed by staff and students of Zikas International School, Sabon Tasha, Kaduna, Nigeria, for a science outreach event called the Science Incubation Project (SIP) 1.0. The outreach event had in attendance heads and members of different committees of the PEAN, staff of the school, media reporters and 136 junior secondary school students. This science outreach event was born out of the desire to ignite a passion for science in the minds of young students and was sponsored by the Biochemical Society (UK). Outreaches such as this have become imperative following the decline in the reading culture of students, high propensity of the younger generation to indulge in social vices and inadequacy of mentorship programs. The director for Research, Pharm Naomi Thomas, and other members of the committee evaluated evidence-based research to back this up.

During the event, Pharm Kenneth Bitrus David, the founder of PEAN, highlighted to the students the importance of science and why it ought to be promoted through outreach events such as this. He said: "Life has

continually revolved around science. Without science, life stagnates. There will be no generation of knowledge, technological advancements, or human development. It plays a vital role in our daily lives as almost everything that humans use operates on the logic of science. For instance, the cloth we wear, benches we seat on, blackboards we write on, books we use to aid learning, modern transportation systems, medical devices, and many others are products of scientific innovations. In the light of that, science ought to be preserved and promoted. This was what inspired the need for this science outreach.

As junior secondary school students, you may currently not have a clearly defined career that you would like to take, it is however advised that you look inward to discover what your purpose on earth is. You can know this by asking yourself these four questions: what are you good at, what do you love doing, what can you do and be paid for, and what does the world need? An intersect of your answers is what your purpose is (the Japanese call this, 'Ikigai'). If your 'Ikigai' is science related, you

will need to take science-based courses when you get to senior secondary”.



PEAN's team and volunteers for the epigenetics experiment

To illustrate and engage the students with the beauty of science, two scientific experiments were carried out one involved making DNA bracelets and the other a Dice Roll Choices game on epigenetics. The students found these activities very engaging and fascinating as they unanimously provided on the feedback forms distributed to them at the end of the exercise. Words like informative, cool, fascinating, educational, fun, inspiring and exciting were written by the students when asked to write words that describe the activities they carried out.

Speaking during the epigenetics experiment, the facilitator Jethro Aaron Akaito explained to the participants the meaning of epigenetics, nature of genes and how lifestyle choices can alter chemical reactions responsible for gene labelling. The aim was to make the students aware that genes are transferred from parents to their offspring and that life choices and experiences have the potential of affecting the genetic make-up of an individual, which in turn can be transferred to their children. In this experiment, two teams of three volunteers each were given a twin template each – Twin one and Twin two, respectively, with hypothetically similar genes. Five questions were asked (relating to whether or not the twin chooses to smoke, have bad eating habits, drink alcohol or have a sedentary lifestyle) and the dice rolled to determine the choices they make. The protocol by 21st Century Biochallenges gave a clearer explanation of the remainder of the experiment: “Once all five questions are asked and the templates are complete, the students were made to understand that the dice roll (or lifestyle choice) for each question led to a physical consequence, even though their genes are the same. And the decisions the twins made don't only

affect them – they may affect their children too (and, potentially, their children's children, and so on). Even though the twin's genes were exactly the same, some lifestyle choices put labels on or took labels off particular genes. You inherit your genes from your mum and dad, but most gene labels are taken off during reproduction, so the baby can acquire its own labels unaffected by mum and dad. Sometimes, though, gene labels slip through to the next generation. So, drinking too much and getting liver disease could affect the health of your child as a result. These gene variations in gene labelling are called epigenetic changes”. The participants were advised to shun all forms of social vices including drug abuse and to maintain a healthy life by exercising regularly, eating balanced diets, maintaining good personal hygiene and having sufficient rest to avoid these effects.



A cross-section of the participants during the DNA Bracelets experiment

The outreach concluded with the distribution of deworming tablets (albendazole) to all the students with adequate pharmaceutical care tips given at the point of dispensing by Pharm Kenneth Bitrus David, Pharm Godwin Bitrus Gajere, Elijah Sunom Umaru, Joseph Nomsu Bijimi, Jethro Aaron Akaito and Abdulwahab Yusuff Adebayo. ■

About PEAN: The Pharmafluence Education Advancement Network (PEAN), founded by Pharm. Kenneth Bitrus David in 2021, is a youth-led organization that aims to promote access to quality education in Nigeria through unparalleled teaching, advocacy and mentorship. It has organized several activities that cut across research, personal development, professional development and outreaches. As most of the challenges faced by the scientific community in Nigeria are rooted in lack of equity, diversity and inclusion, PEAN is advocating for an equitable, diversified and inclusive educational system in Nigeria.



Kenneth Bitrus David was born on March 3rd and belongs to the Adara ethnic group found in Kufana, Kajuru Local Government Area of Kaduna State, Nigeria. He currently lectures at the Department of Pharmacology, Kaduna State University, Nigeria. He graduated with a Bachelor of Pharmacy degree from the same university and had an MSc Pharmacology and Drug Development degree from the Hull York Medical School, UK. He was one of the winners of the Pharmanews Young Pharmacist of the Year Award in 2020, an initiative introduced in 2018 by Pharmanews to recognize and encourage innovation and active involvement of young pharmacists in public healthcare and community health/social development. Twitter: @kennethbdavid2 Email: kennethdavidb@gmail.com



Born and raised on a farmstead, a local of Atyin-Afang in Jema'a Local Government of Kaduna State Nigeria, Godwin Gajere Bitrus enjoys the scenery and smell of green vegetation and natural panorama. He graduated summa cum laude from Kaduna State University in 2018, completing a Bachelor of Pharmacy degree and has since then practiced as a community pharmacist, hospital pharmacist and currently the production manager of Hyenang Pharmaceutical Limited, a Nigerian pharmaceutical manufacturer of infection prevention and control products. His interest cuts across history, philosophy, literature, chemistry, pharmaceutical research and development and most recently writing. Email: bitrusgodwing@gmail.com



Elijah Sunom Umaru was born in Kaduna, Nigeria, and raised in Lagos, Nigeria. He is a native of Shee Dandan I in Kachia Local Government Area of Kaduna State. He picked interest in the medical sciences at an early age. He is currently a Pharmacy undergraduate student at Kaduna State University, Nigeria, and is a student researcher with a few of his research works published in journals of international repute. His areas of research interest are pharmacology and clinical pharmacy. His interests also include literature and philosophy while his hobbies are singing and dancing. Twitter: @straightsoul1 Email: sunomkttw@gmail.com