

GET AFRICA

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IMPORTANCE OF GENOMICS IN ADDRESSING BIOSECURITY THREATS

**AFRICAN NEWSLETTER ON EMERGING
INFECTIOUS DISEASES AND BIOSECURITY**



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Global
Emerging Pathogens
Treatment Consortium



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WELCOME ADDRESS BY GET COO.

It is with great delight that I welcome us to the 6th edition of the GET Consortium (Global Emerging Pathogens Treatment Consortium)'s newsletter. This edition of the newsletter focuses more on genomics and bioinformatics space in biosecurity. This is an attempt to bring this field of study into academic discuss before our annual conference coming in 27-29 October tagged: **“Universal Approach to Addressing Biosecurity Threats: Genomic Intelligence and Vaccines”**. Different write ups in this volume established and highlighted the impact and essential role of genomics in efficient and effective healthcare delivery.

The world in the last few years has witnessed devastating consequences of emerging infectious diseases that is particularly evident in Africa. The ongoing COVID-19 pandemic goes to further expose how technologically savvy countries could be vulnerable when there are inadequate real-time genomic surveillance strategies. Latest development in COVID-19 management around the world identified the importance of genomics and bioinformatics. Countries with substantial research

capacity for genomics and bioinformatics such US, UK, Germany, China Russia etc. were able to deploy this genomics techniques for development of diagnostic kits for rapid detection, swift vaccine developments, immunoresponses discovery, pharmacogenomics, transmission dynamics and antimicrobial resistance insurgence that has greatly helped in containing this pandemic.

In view of this, we agitate for an extension of this technique to all aspects of emerging infectious diseases ranging from disease pathogenesis, mechanisms, and the spread of antimicrobial resistance, to host immune responses and medical intelligence. It is my hope that beneficial implication of genomics on fight against the pandemic will inspire and inform paradigm shift in the continent and encourage African government to invest more in genomic technology and innovation.

**Dr. Bobadoye Ayodotun,
Chief Operating Officer,
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IMPORTANCE OF GENOMICS IN ADDRESSING BIOSECURITY THREATS

By Segun Fatumo (Ph.D), Chisom Soremekun, Prof. Nash Oyekanmi

A complete set of the DNA and genes of an organism is known as the genome and genomics is the study of whole genomes of these organisms. Genomics utilizes a combination of recombinant DNA, high throughput DNA sequencing methods, and bioinformatics to sequence, assemble, and analyze the structure and function of genomes.¹

The advent of next-generation sequencing technologies created a revolutionary impact on human genomics study. For decades, Sanger sequencing using fluorescently labeled terminating nucleotides and electrophoresis which has been the gold standard sequencing technology.² Sanger sequencing made an early impact in the field of microbial genomics, with the first complete bacterial genome, *Haemophilus influenzae*, sequenced in

1995.³ This sequencing technology was also utilized for the human genome project which aimed to sequence the whole human DNA. This project took over 13 years and cost more than \$3 billion.⁴

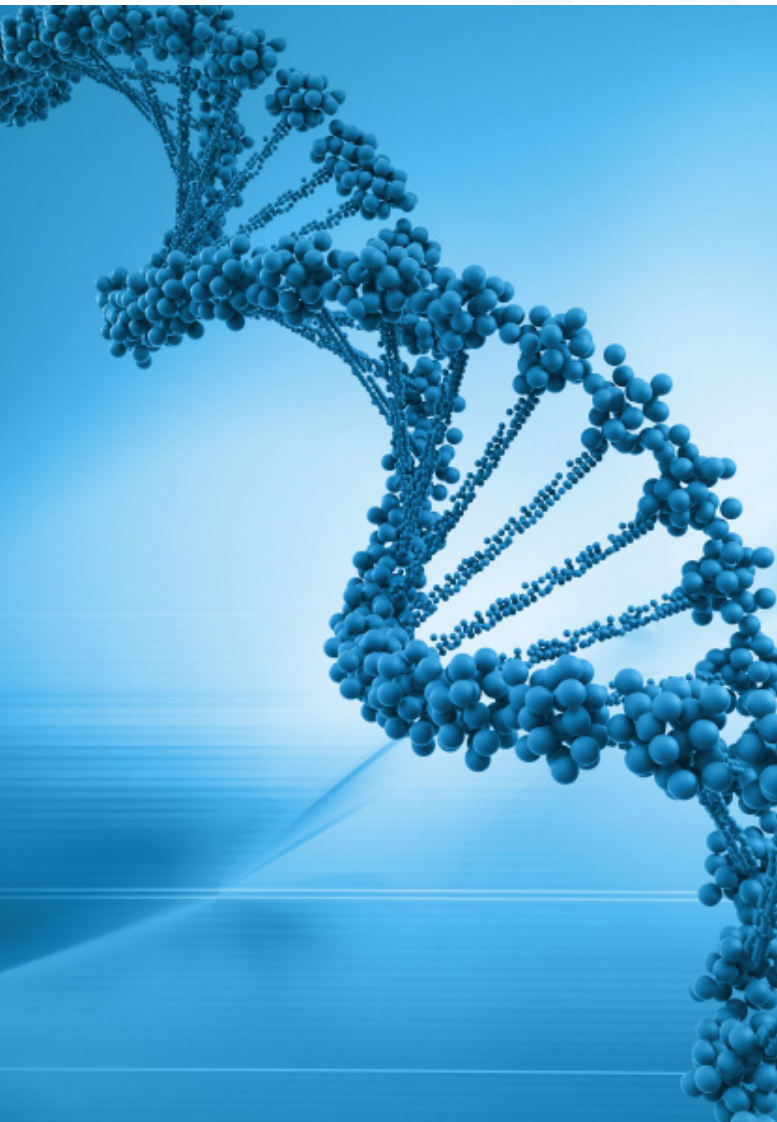
The arrival of Next Generation Sequencing was a game changer in genomics which allows billions of DNA to be sequenced in parallel at a lower cost and shorter time. Next generation sequencing became an essential tool in genetic and genomic analysis. This led to an enormous increase in available sequence information leading to a rapidly widening gap between the amount of raw sequence data and their analyses by means of genetic approaches. An increasing need for high throughput analysis methods has led to the development of sophisticated bioinformatics approaches.⁵ These bioinformatics tool has played great role especially in the area biosecurity.

Importance of Genomics in Addressing Biosecurity Threats

Genomics and bioinformatics tools can be readily applied to follow outbreaks of infectious diseases. This was clearly illustrated during the coronavirus disease 19 (COVID-19) outbreak in 2019. COVID-19 which originated from Wuhan, China is a global epidemic with high mortality rate. It is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Genomics played a key role in the immediate response to the outbreak. Genomics information was generated within a short time and validated diagnostic tools were made available. A global response was made possible through tremendous research efforts enabled by genomic research in the following areas.

Genome Databases

Several information based on SARS-CoV-2 classification, mutations, genome evolution, and antiviral drug development was accumulated and there was need for proper storage of these information. Databases and tools required for the fast analysis of these genome sequences were established in several online platforms worldwide. NCBI provided the BLAST alignment tool in SARS-CoV-2 Resources and the University of California, integrated the visualization browser with alignment and variant annotation tools in its SARS-CoV-2 Genome Browser. The 2019 Novel Coronavirus Resource was also built for studies on viral taxonomy, genome evolution, molecular diagnosis, and drug development.⁹ Interestingly, a genotypic method has been established for monitoring and tracing SARS-CoV-2 mutations and Sara et al developed a web-based bioinformatics tool "Genome Detective Coronavirus Typing Tool" for accurate identification, assemble, classification of coronaviruses genomes, and tracking of new viral mutations in SARS-



CoV-2 genome sequences.^{9,10} This helped in the promotion of SARS-CoV-2 research.

Understanding the structure-function of SARS-CoV-2. Some mutational hotspots of SARS-CoV-2 with deleterious effects were identified with the aid of structural genomics. These hotspots had damaging effects on the functional evolution of coding proteins, host specificity, and infectivity and they are important for designing a COVID-19 vaccine and rapid detection of different genotypes of SARS-CoV-2. Also, possible drug-resistance phenotypes were assessed by evaluating the mutational variants in viral target proteins.¹¹ It is impossible for SARS-CoV-2 to replicate during infection, therefore they must possess cellular factors for replication in the host, thereby sustaining the infection. The mechanisms of its infection can be elucidated with a systematic analysis of virus-host protein-protein interactions.¹²

Structure Based Drug Design

In the quest for COVID-19 vaccine, Ton et al developed a computational drug design tool called Deep Docking (DD). This tool helped accelerate the screening of large chemical libraries which consist of billions of entities and overcome the challenge of slow structure-based drug designing process. The platform provides fast prediction of docking scores of Glide and, hence, enables structure-based virtual screening of billions of purchasable molecules in a short time.¹³

In conclusion, bioinformatics tools has facilitated the understanding of organisms, therefore they can be used to address biosecurity threats.

The future evolution, adaptation, and spread of this virus warrant urgent investigation. It is imperative to discover affordable drugs to control and diminish the pandemic.

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BIOINFORMATICS AND GENOMICS REVOLUTION: PANACEA TO EFFECTIVELY ADDRESSING BIOSECURITY THREATS IN AFRICA

By Dr. Babatunde Taiwo

Background

The increasing spate of infectious disease emergence ravaging the entire continent poses critical threat to the global health institution. In the wake of this, developed nations have adopted genomics techniques to revolutionize approach to healthcare delivery. Several medical interventions approach in the management of infection outbreaks exploits the application of genomics techniques to mitigate biosecurity threat (Valdivia-Granda, 2010). For example, diagnostic kit for rapid detection, swift vaccine developments and breakdown, immunoresponses discovery, pharmacogenomics, transmission dynamics and antimicrobial resistance insurgence are few of highlights of genomics and bioinformatics application in medicine. Infection surveillance, one of the strategic aspects of epidemiology in managing infectious diseases has witness huge transformation in the last few decades with the help of genomics and bioinformatics (Frickle et al., 2009). Recent studies have identified strategies that deploy genomics and bioinformatics tools for early detection and prevention

of future pandemics. High income and some Africa countries have fully integrated and implement digital and genomics transformation in their public health care system. This novel approach has enabled numerous opportunities such as, real time detection of microbial outbreak, intercontinental data sharing of emerging threat, network of resources and expertise, clinically targeted personalized treatment, and Translational medicine (STEM Cell and CRISPR/CAS system) (Gardy and Loman 2018).

Bioinformatics and Genomics have contributed immensely to our understanding of infectious diseases: from disease pathogenesis, mechanisms, and the spread of antimicrobial resistance, to host immune responses and medical intelligence. The principal pathogen genomics can be used to improve the management of infectious disease through improved diagnosis, detection and tracking of antimicrobial resistance and outbreak control. In the face of ongoing outbreak there is never a time to relax, recent daily casualties recorded in India, suggest that it's imperative to move away from realm of speculation to evidence-based report. India

used to have very low incidence case until the emergence of an infectious strain, B.1.617 in matter of days, death rate increased by many folds.

Genomics has not only been effective in the management of communicable diseases, but non-communicable diseases has also benefited profoundly from genomics, introducing the rapid growing field of medicine known as Precision Medicine or Personalized medicine. This is also evident in the study at Centre for Research on Genomics and Global Health – CRGGH, NIH) on metabolic disorders including obesity, diabetes, hypertension, dyslipidemia, kidney diseases and related traits (Azvolinsky, 2018).

Despite the huge potentials of genomics and bioinformatics research in helping sub-Saharan African countries address health challenges posed by emerging infectious diseases, African countries still lack behind other regions in genomics research, resources, and policies (Rotimi, 2004). Various initiatives such as Human Heredity and Health in Africa and Alliance for Accelerating Excellence in Africa have developed programme to bridge the gap in genomic and bioinformatics research and capacity building in Africa, but there is need for considerable expansion especially in emerging infectious diseases such as Lassa fever, Ebola, and COVID-19. This project will meet that need by conducting transdisciplinary research that uses genomics to address huge emerging infectious disease (Lassa fever, Ebola disease and COVID-19) challenge in sub-Saharan Africa, the project will address the huge human resource deficit in genomics research in sub-Saharan Africa by building capacity of relevant stakeholders at all levels in genomic and bioinformatics technology (Wonkam, 2021). Interestingly genomics exercise substantial role in

understanding and implementing the present globally accepted concept of ONE Health strategy. In 2004 there was a round table meeting at National Human Genome Centre at Howard, where the influence of genetics and race on health disparities was deliberated upon. This meeting obviously set the stage for a new era of interdisciplinary inquiry into the challenging topic of race and genetics, as it impacted on our health (Collin, 2004). Finally, the project will work with policy makers, health professionals, and other stakeholders to develop legal regulatory frameworks for genomic research and biosecurity in Africa.

A ten years \$180-million laudable project initiated by National Institute of health in collaboration with some African organizations; African society of human genetics and Human heredity and health just concluded the task to sequence three million genomes across Africa tagged, Three Million African Genomes-3MAG (Wonkam 2021). The second phase of this noble initiative is on the way, Nigeria being the largest black population in the world should as a matter of necessity prepare herself to access full benefit of the project. However, there is still huge paucity of expertise and resources on bioinformatics and genomics in our public institutions generally. Currently a renowned Nigerian, Dr Charles Rotimi, sit atop multi billion dollars biomedical institute in America, aggressively funding and promoting the remarkable role of genomics and bioinformatics in Medicine especially in African. Hence this substantially informed the theme of 2021 GET AFRICA annual conference title: Universal Approach to Addressing Biosecurity Threat: Genomics Intelligence and Vaccine.



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GENOMIC SURVEILLANCE BEYOND COVID-19: ANTIBIOTIC RESISTANCE GENES IN THE ENVIRONMENT AND BIOSECURITY THREATS

By Prof. Oluwafemi S. Obayori,
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Biosecurity measures are essentially aimed at preventing the introduction and/or spread of harmful organisms to plants and animals, including man. The essence is to prevent the transmission of Infectious diseases. The very idea of biosecurity therefore presupposes that these diseases have probably not always been there, not found or adapted to conditions in all countries around the world and have the potential of becoming more or less virulent and prevalent in regions where they had hitherto not been seen or of acquiring traits that lend them greater potential to wreak havoc where previously they were known to be endemic, but more temperate. Epidemiological tracking is therefore of utmost importance.

In 21st century genes and genomes have become central to our understanding of the nature of biodiversity and associated risks and challenges. It has even become more so in the light of emerging and re-emerging infectious diseases caused by pathogens which are becoming more and more resilient as a result of their ability to surmount their hosts' defence mechanism and enfeeble antimicrobial agents. Hitherto undetected species, phylotypes and strains which are cleverer at evading host defences continue to give scientists, institutions and governments sleepless night and a run for their money.

The story of the coronaviruses, culminating in the global COVID-19 global pandemic, best exemplifies the importance of futuristic epidemiological concerns. The current global pandemic is no doubt a wakeup call. Predictive logistics and its successes and shortfalls underscore the need for biosecurity consciousness and preparedness at all levels. The devastating impact of the emergence delta variant of SARS Cov-2 amidst radiant successes in control of the pandemic predicated upon non-pharmaceutical measures and vaccine discovery has no doubt reinvigorated and energized the scientific world towards leveraging on genomics in tracking the spread of Infectious agents.

Addressing biosecurity threats at the genomic level obviously has its own advantage over other approaches. Whereas traditional tracking approaches often follow real and actual movement of pathogens and biological threats, providing information based on detectable manifestations, genomics helps to answer the question, who is there and what is capable of doing? It helps in early identification of potential threats, even before phenotypic, structural, and physiological manifestations are observed.

However, mobility and transfer of genes under selective environmental pressure due to pollution has not been properly factored into biosecurity, particularly in Africa. Antimicrobial resistance genes, integrons, transposable

elements and plasmids can be considered potentially most potent (lethal) bio-based bombs in a world divided along myriad principles, ideological line, and commitment to international standards, yet striving for unity in all ramifications.

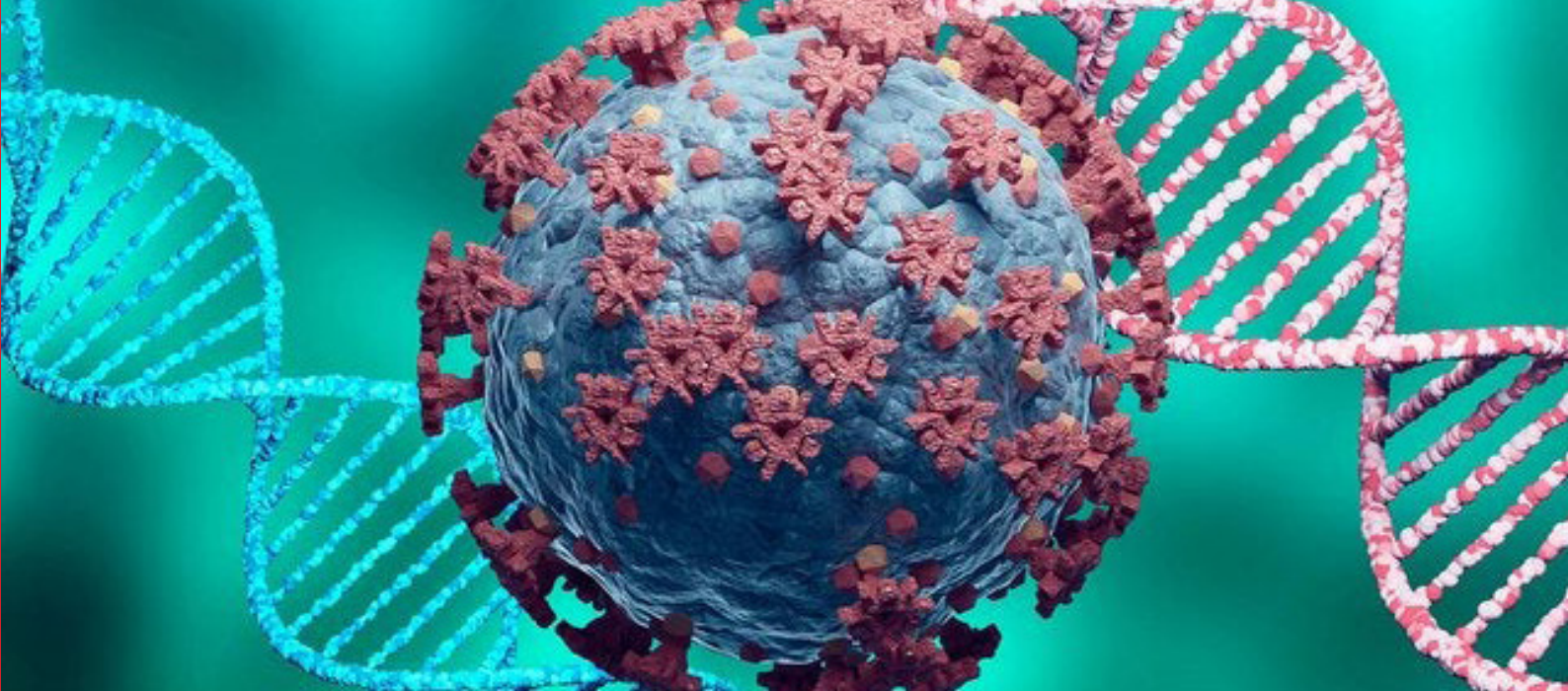
It has been established beyond doubt that non-pathogenic bacterial species in the wild are a veritable source of spread of antibiotic resistance to pathogens of clinical importance.¹ Recent studies have also highlighted the role of environmental pollutants arising from anthropogenic activities around large scale and cottage industrial processes in selection and co-selection of resistance genes with potential for dissemination to pathogens.² It is equally instructive that against the backdrop of poor sanitation, the waterways and ocean remain the ultimate sink for antibiotics and other antimicrobial agents used in poultry and livestock farming as well as those open to abuse in humans.³

Another area deserving of attention is the likely consequence of thawing of the polar ice caps, rising sea levels and flooding as a result of global warming, which could lead for the first time in millennia bring spatially and genetically estranged microbial strains in close proximity. What levels of genetic exchange could be expected from such interactions?

Furthermore, several other factors which potentiate and modulate biosecurity risks in other spheres also have impact, if only indirectly, on the risk of spread of antibiotic resistance genes. Increasingly, nations are more interdependent than independent. But amidst growing inequality in access and rapidly expanding human resources, shrinking biodiversity, environmentally unfriendly and sub-optimal exploitation of mineral resources and increasing awareness and quest for broadening of democratic space can the continent be expected to proportionately play its part and appropriate sustainably benefits from such integration?

Cross border grazing and free ranging livestock and poultry, especially in sub-urban and rural settings, as well as unhygienic animal slaughter are sources of risk. Equally, cultural practices and some kinds of ritual animal slaughter portend danger for zoonosis. Large uncontrolled wet markets in coastal and sub-urban rurality remain sources of concern. Invasion of pristine environments and unintentional abuse of wetlands is another source of concern.

Although the second largest continent in terms of land mass and size Africa remains under resented in the preservation and sharing of bioresources. For instance, out of 72 countries with culture collection, only 7 are in Africa, of 708 collections, only 11 with 15,935



holding out of a total of 2534910.4 Likewise, there is a disproportionate representation of the continent in genomic and bioinformatics data repositories, including those dedicated to antibiotics and other Antimicrobial. The reasons for this cannot be far-fetched, with the scale weighing more on the side of lack of resources and generally poor capacity.

Globally, microorganisms in the environment remain largely uncultured with some carrying functionalities that do not correlate with what exist in the databases around the world. 5 Thus employing the genomic approach to tracking of emergence of antibiotic resistance will not only serve the purpose of rapidly collecting precise and reliable data on known pathogenic strains on the continent, but it will also help to address the dearth of information on uncultured species and their antimicrobial functionalities. Whether from target amplicon sequences, whole genomes sequences of

cultured isolates or metagenomes of environmental communities, populating repositories with sequences from Africa portends well for the future of One Health in Africa.

Prioritization of conservation and protection of wetlands and other pristine ecosystems from anthropogenic abuse is key to minimizing the risks associated with the introduction of resistance genes conserved in the wild into human, animal, and plant pathogens.

At the continental and national levels, there is need for unalloyed commitment to the application of genomics and bioinformatics in monitoring and surveillance, applying appropriate frameworks and ensuring commitment of resources. Lastly, Africa needs to prioritize molecular biology, bioinformatics, and big data management in institutions of learning in order to empower a new generation of life scientists ready face the challenges of today and the decades ahead.

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CAN OUR GENES SHAPE OUR FUTURE?

By Akanksha Awadhesh Singh
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Genetics is a branch of science that deals with the study of genes and how they are heritably transferred from the parents to the offspring^[1].

Genes are the fundamentally responsible for our existence since time immemorial. From the origin of Anamnesis dating back 4.2 million years that is evaluated to the Homo Sapiens, genes acted as deciding factors for the way we live, eat, and survive^[2].

Genetics has not only influenced our existence but is also principally applied in agriculture. During the early 19th centuries and late 20 centuries, man recognized the importance of genetics and started implementing it in the identification of various diseases. This time was recognized as the "Era of Genetics" in which major discoveries such as identification of genetic traits, the importance of nucleic acid, and phenomena such as natural selection and evolution by many scientists were put in front of the world^[3]. These theories became the base for other groundbreaking discoveries such as that of DNA by Watson and Crick in the 1960s

and that lead to the formulation of Central Dogma of molecular biology. According to this, DNA is transcribed into mRNA that is further translated into the protein^[4].

While the discovery of DNA was a boon to mankind that formed the base for understanding complex disorders such as obesity, cancer, and diabetes, but also empowered law and order by facilitating paternal identification, identification of criminals with aid of the techniques such as RFLP and RAPD gave rise to another area of study called Forensic Science^[5]. Although the utility of genetics made our lives feasible, we started misusing it in some or other ways.

On the Contrary, genes imposed a huge number of biological threats around the globe. The excessive use of microbes in the development of toxins and other chemicals may lead to disease development which forms the baseline of biological warfare at a global level^[6]. The most appropriate example is that of Coronavirus which has affected millions and trillions of people. It was the consequence of



utilizing the microbes in a haphazard manner that gave rise to the pandemic. Man must understand that biomolecules or genes are required to be wisely used. According to the report by WHO, biological weapons are affecting people not only physically but even mentally [7]. Although the gene manipulation techniques turned to be a treasure for man in treating many genetic disorders, humans used them haphazardly by disrupting the social and ethical implications. Scientists started utilizing genetics to mutating and transferring the toxic genes in the microorganisms to use it as a biological weapon that may ultimately empower the economics and security of their nation.

Biological threats not only refer to the development and engineering of genomes of microbes but

also affecting the health and psychology of the individual in the real sense. It is disheartening to know that we are misusing genetics every day in our lives. For instance, if the patient is suffering from a genetic disorder that has no cure, the doctor will reveal the report to the patient's family or the other members of society. The patient will be ill-treated by the people and thus ultimately affecting the psychology of the patient.

It is high time that humans need to understand the correct utilization of genomics and use it wisely for the welfare of mankind. Nations need to exercise social, legal, and ethical implications for genetics appropriately for the better functioning of the world.

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ANNOUNCEMENTS ON THE 7TH AFRICAN CONFERENCE ON ONE HEALTH AND BIOSECURITY

We are pleased to announce that the 7th African Conference on One Health and Biosecurity will take place at Civic Center, Victoria Island, Lagos State, Nigeria from the 27th - 29th of October 2021. The conference will be both in-person and virtual.

The Annual conference on One Health and Biosecurity is one of the biggest biosecurity conferences in Africa and it usually attracts about 400 global experts in various fields from all the continents of the world. The 7th African conference is organized by professionals from Global Emerging Pathogens Treatment Consortium (GET) with the support of the Lagos State Ministry of Health.

The theme for this year's conference is: "Universal Approach to Addressing Biosecurity Threats: Genomic Intelligence and Vaccines".

This year, the United Nations Office for Disarmament Affairs will participate in the conference and co-organize a thematic session on the international biosecurity normative framework, including the Biological Weapons Convention, Security Council resolution 1540 (2004) and the UN Secretary General Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons.

Attending the 7th African Conference provides you with the opportunity to forge valuable new connections and acquire insights to enhance your one health and biosecurity knowledge with practical application at your workplace. The wide variety of presentations and discussions will increase your professional development, address scientific issues and management trends. The Conference will be "COVID-19 COMPLIANT".

For more information about the conference and to register, click here:

<https://www.getafrica.org/conference-2021-registration/>

Theme:
"Universal Approach to Addressing Biosecurity Threats: Genomics Intelligence and Vaccine".

27th-29th October, 2021

Civic Centre, Victoria Island Lagos, Nigeria.



GET Global Emerging Pathogens Treatment Consortium

with the support of



Lagos State Ministry of Health



7th African Conference on One Health and Biosecurity

Theme: **Universal Approach to Addressing Biosecurity Threats: Genomic Intelligence and Vaccines.**

27th - 29th October, 2021 **Civic Centre, Lagos, Nigeria**

LEAD SPEAKER



Sir Hilary Beckles
Vice Chancellor,
The University of the West Indies.

SELECTED SPEAKERS



Prof. Akin Abayomi
Hon. Commissioner for Health
Lagos State.



Prof. Charles Wiysonge
Epidemiologist & Vaccinologist
South African Cochrane Centre,
South Africa.



Prof. Christian Happi
Professor of Molecular Biology
& Genomics, Redeemers'
University, Ede, Nigeria.



Dr. Valerie Oriol Mathieu
Global Medical Affairs Lead,
Vaccines Janssen Vaccines &
Prevention, Netherlands.



Dr. Sam Ujewe
Senior Research Ethics Advisor
Canadian Institutes of Health
Research.



Prof. Mayowa Owolabi
Dean, Faculty of Clinical
Sciences, University
of Ibadan.



Dr. M. Th. Mayrhofer
Head of ELSI Services &
Research BBMRI-ERIC,
Austria.



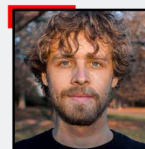
Pasquela De Blaiso
Managing Director, Integrated
Systems Engineering SRL
(ISENET) Milan, Italy.



Prof. Alan Christoffels
Director of the South African
National Bioinformatics
Institute.



Prof. Abiodun Denloye
Professor of Applied
Entomology, Lagos State
University.



Dr. Tom Rausch
Communication Expert,
Ministère de la Santé
Luxembourg.



Dr. Ayodotun Bobadoye
Chief Operating Officer,
Global Emerging Pathogens
Treatment Consortium.

Conference Highlights

- Special Session by the United Nations Office for Disarmament Affairs (UNODA).
- Policy Makers & Researchers Interactive Session

Registration link

<https://www.getafrica.org/events/conference-2021/>

✉ bobadoyed@getafrica.org, ifeoluwa@getafrica.org
☎ +234 806 769 9338 www.getafrica.org



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SPECIAL SESSION BY UNITED NATIONS OFFICE FOR DISARMAMENT AFFAIRS (UNODA)

SPEAKER



Ms. Einas Mohammed
Africa Regional Coordinator
on UNSCR 1540, UNODA



Mr. Talkmore Maruta
(PhD, MPH, MBA, HBMLS)
Senior Biosafety and Biosecurity
Officer, Africa CDC



Mr. Trevor Smith
Senior Program Manager for
Biological and Chemical Security
& UNSCR 1540 Implementation
Weapons Threat Reduction Program
Global Affairs Canada (GAC)



Professor David R Harper
CBE, FRSB, FFPH, Hon FRSPH
Senior Consulting Fellow, Global
Health Program - Chatham House
Managing Director, Harper Public
Health Consulting Limited



Dr. Ayodotun Bobadoye
Chief Operating Officer,
Global Emerging Pathogens
Treatment Consortium.
Moderator

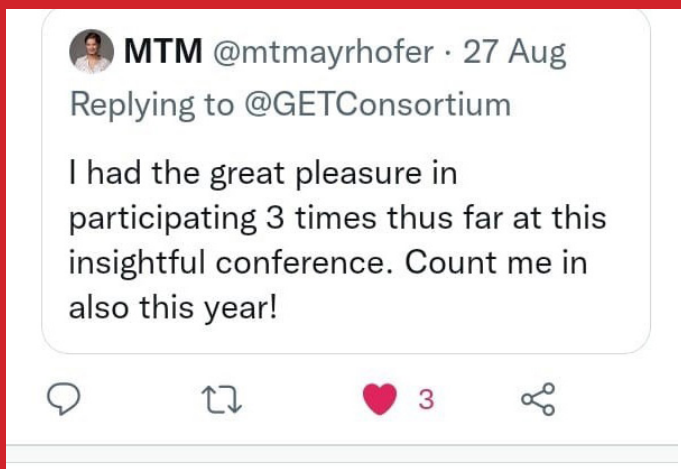
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Global Partnership Against the Spread of
Weapons and Materials of Mass Destruction

Past Conferences Feedbacks from Our Twitter Page. Kindly Search and Follow Us on All Social Media Platforms Using @GETConsortium



27th-29th October, 2021

Civic Centre, Victoria Island Lagos, Nigeria.



Organizes



**7th African
Conference on One
Health and Biosecurity**



**JOIN THE
BIGGEST ONE HEALTH &
BIOSECURITY CONFERENCE
IN AFRICA**

Theme:
**Universal Approach to Addressing Biosecurity
Threats: Genomic Intelligence and Vaccines.**

**OCTOBER
27TH - 29TH, 2021**

Save the Date

Registration link

<https://www.getafrica.org/events/conference-2021/>

Supported by



SPONSORSHIP FOR THE 7th AFRICAN CONFERENCE 2021

It will be a great privilege to have you on board as one of our sponsors for the 7th African conference. Funds generated will be spent on renting of the conference venue, conference publicities, travel logistics, hotel accommodations, feeding, and other major conference logistics.

Sponsoring this conference would be a wonderful opportunity for your organization to have some visibility in front of an audience who could benefit, partner, or contribute to the product or service your organization is rendering. You and other representatives of the company are most welcome to attend the conference and encourage the participants.



Sponsorship Options

Below are sponsorship options to assist you in finding the right level for your budget:



Platinum Sponsor

Worth \$20,000. In return, your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website. Your organization's name will be mentioned throughout the event during key sessions. Your organization's name and logo will also be displayed as a sponsor of a luncheon, outing, or special event. An exhibition booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme. Three complimentary registrations are available at this level.

\$20,000
worth



Gold Sponsor

Worth \$10,000. In return, your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website. Your organization's name will be mentioned throughout the event during key sessions. An exhibitor booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme. Two complimentary registrations are available at this level.

\$10,000
worth



Silver Sponsor

Worth \$5,000. In return, your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website. Your organization's name will be mentioned throughout the event during key sessions. An exhibitor booth or display table will be provided by GET in the main, well-traveled conference lobby and free full-page advert in the conference programme. One complimentary registration is available at this level.

\$5,000
worth



Bronze Sponsor

Worth \$2,000. In return, your organization's name and logo will be prominently displayed on conference materials, including the program and the conference website. Your organization's name will be mentioned throughout the event during key

\$2,000
worth



Conference Advert

Worth \$1,000.00. Your organization will have a full-page advert in the conference proceedings and an exhibition booth at the conference lobby.

\$1,000
worth

For Sponsorship details, send an email to: bobadoyed@getafrica.org or call: +2348120561552.

CALL FOR MANUSCRIPTS

GET Journal of Biosecurity and One Health is presently receiving submission of manuscript for the forthcoming issue. The GET Journal of Biosecurity and One Health is a peer-reviewed open access journal that will be published by Global Emerging Pathogens Treatment Consortium - Africa (GET).

GET Journal is dedicated to increasing the depth of the subject across disciplines with the aim of expanding knowledge of the subject. It provides a platform for researchers, academics, practitioners, professionals, and students to share knowledge and interrogate issues around the relatively new multidisciplinary areas of Biosecurity and One Health. Subject areas in focus span Biosecurity, One Health, Biosafety, Anti-Microbial Resistance (AMR), Biobanking, Bioinformatics and related fields. The journal aims to publish high quality varied article types such as Research, Reviews, Short Communications, Case Reports, Perspectives (Editorials), Clinical Images.

We welcome the submission of manuscripts that meet the general criteria of significance and scientific excellence. Manuscripts submitted may cover areas related to the following:

• **Biosecurity**

• **One Health**

• **Biosafety**

• **Anti-Microbial Resistance (AMR)**

• **Biobanking**

• **Bioinformatics**

• **Bioterrorism**

• **Animal Biosecurity**

• **Global Health**

• **Invasive Species**

• **Infectious Diseases**


• **Nuclear Terrorism**

• **Emerging Infectious Diseases**

• **Bioterrorism and Pandemic Planning**

Submission of Manuscripts
Full manuscripts can be submitted to:
submit@getjournal.org
or Visit **https:// getjournal.org**

CONTACTS
admin@getafrica.org,
submit@getjournal.org

   @getconsortium  www.getafrica.org

Inauguration Of Get One Health School Club (GHSC)

The most important role of our education system is to build a brighter future for our nation's students as professionals and as citizens, which hinges on its ability to providing students with the skills to obtain well-paying, valued careers. To achieve our vision and prepare our education systems for the future, we have to consider not just the changes that appear most probable but also the ones that we are not expecting. Education is a powerful agent of change and improves health and livelihoods, contributes to social stability, and drives long term economic growth.

To this regard, GET has planned to organize an official inauguration programme for its newly formed club called GET One Health School Club (GHSC) on the 29th of September 2021 at Premier Hotel Ibadan. GET will be piloting this project with four (4) different Senior Secondary Schools within Ibadan and there is a future projection of increasing the schools.

The Ministries of Education, Health, Agriculture, and Environment & Water Resources in Oyo State will be supporting GET to organize the programme.

ABOUT GHSC CLUB

The GET One Health School Club is a student-focused club initiated by the Global Emerging Pathogens Treatment Consortium to introduce the concept of One Health to students in various schools.

VISION OF GHSC

The vision of the club is to educate young minds on the holistic approach towards community health challenges by the sensitizing Senior Secondary Students on the connection between humans, animals, plants health, and their shared environment which represent the One Health Concept.

The GET One Health School Club's initiative will support and create awareness amongst the students at the

adopted schools on the concept of One Health with the main objective of undertaking activities that improve humans, animals, plants, and environmental health.

GHSC ACTIVITIES

The Club activities will include periodic seminars for students and teachers on topics such as antimicrobial resistance, biosecurity, emerging infectious diseases, the concept of one health, climate change, waste management, pollution, environmental sustainability etc.

GHSC BENEFITS

The club members will get valuable training and field experience rooted in the One Health Approach, as well as leadership and mentorship opportunities.



INAUGURATION OF GET ONE HEALTH SCHOOL CLUB (GHSC) (IBADAN CHAPTER)



**Wednesday 29th,
September 2021**



Premier Hotel Ibadan

PILOT SCHOOLS

- Loyola College Ibadan
- St Catherine College
- Qiblah High School
- Community Grammar School Ibadan.



**Approved by
Oyo State Ministry
Of Education**



Scholarships/Grant Opportunities For Researchers

- Africa Data Science Intensive (DSI) Program 2021 for young African Students (Fully Funded Workshop in Cape Town, South Africa).

<https://www.opportunitiesforafricans.com/africa-data-science-intensive-dsi-program-2021/>
Application Deadline: 30 September 2021

- CEPI: Broadly Protective Beta coronavirus (BPBC) vaccine.

<https://www.catalyze-group.com/covid-19/cepi-broadly-protective-betacoronavirus-bpbc-vaccine/>
Application Deadline: 1st October 2021

- Chevening UK Government Scholarships Programme 2022/2023 for study in the United Kingdom (Fully Funded)

<https://www.opportunitiesforafricans.com/chevening-uk-government-scholarships-programme-2022-2023/>
Application Deadline: November 2nd, 2021

- Full bright Foreign Student Program 2022/2023, Master and PHD for study in the USA (Fully Funded).

<https://www.opportunitiesforafricans.com/fulbright-foreign-student-program-2022-2023/>
Application Deadline: Varying by Country

- Fund for Innovation in Development Grant Programme

<https://www2.fundsforngos.org/latest-funds-for-ngos/fund-for-innovation-in-development-grant-program/>
Application Deadline: Ongoing

- The United Nations Academic Impact/MCN Millennium Fellowship 2022 for Emerging Leaders Worldwide

<https://www.opportunitiesforafricans.com/the-united-nations-academic-impact-mcn-millennium-fellowship-2022/>
Application Deadline: Ongoing

- NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed) Department of Health and Human Services National Institutes of Health

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=326889>
Application Deadline: May 2023

EDITORIAL TEAM

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Prof. Morenike Folayan
Ms. Jennyfer Amber
Prof. Oyewale Tomori
Dr. Samuel Uweje
Dr. Tom Rausch
Mr. Pasquale de Blasio
Dr. Bobadoye Ayodotun
Ms. Omowunmi Okunniyi
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