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Covenant University, Ota

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	Room 4: CApIC-ACE Seminar Room Post-COVID dynamics of Agricultural sufficiency and food security (Agriculture)	Session Chairs: Prof. Osita Ugbogu/Dr. A. E. Adebusayo Hall Manager: Samuel Oyegbade/ Obadire Tobiloba
12:10 pm – 12:15 pm	TEA BRE	AK
12:15 pm - 3:15 pm	ANNUAL GENERAL MEETING	NSM NEC
	CLOSING SE	SSION
3:15 pm – 3:25 pm	Conference Communique	Prof. U.A. Dutsinma, NSM Secretary
3:25 pm – 3:30 pm	Vote of thanks	Dr Paul Akinduti
3:30 pm – 3.40 pm	Closing remarks	Prof. C.A. Omonhinmin
		Prof S.U Oranusi
3.40 pm – 3:50 pm	Conference closing (Declaration)	Prof. Abiodun H. Adebayo
3.50 pm – 3:58 pm	MoU Signing for Conservatory facility @ Covenant	Prof. Abiodun H. Adebayo/Prof. M.B. Yerima
3:58 pm – 4:00 pm	Closing Prayer	Chaplain
4.00 pm – 5.55 pm	Bioinformatics Workshop: In Silico training for Students	GENOMAC Hub
6.00 pm – 6.30 pm	Mentorship, Networking, Collaborations	LOC Students Sub-Committee
	Rapporteurs	Dr F. Iheagwam, Dr A. Benson, Mrs Ibukun Ajiboye



Secretariat LOC Co-Chai	
LOC Co-Chai	r
Secretary Liaison Offic	er
	Logistics

rof. Obinna Nwinyi (Chair)	Prof. C.A Omonhir
rof. Alexander Odaibo	Dr. Patrick Isibor
rof. Emeka. Iweala	Dr. Oluwafemi Oy
Prof. Solomon Oranusi	Dr. Franklin Iheag
rof. Solomon Rotimi	Pastor Williams Ay
)r. Mattjew Egharevba	Mrs. Oshamika W
r. Ayodeji A. Ayoola	Mr . Olusola Oves
r. Isaac Ayanda	Welfare
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)r. Benedict Agoha	Dr Olayemi Akinno
or. Benedict Agoha Or. Jacob Popoola	Dr Olayemi Akinno (Chair)
or. Jacob Popoola	(Chair)
or. Jacob Popoola or. Maxwell Omijie	(Chair) Dr. Winnifred Ana
or. Jacob Popoola or. Maxwell Omijie or. Paul Akinduti	<i>(Chair)</i> Dr. Winnifred Ana Dr. Margaret Onih
or. Jacob Popoola or. Maxwell Omijie or. Paul Akinduti or. Ahuekwe Eze	<i>(Chair)</i> Dr. Winnifred Ana Dr. Margaret Onih Mrs. Ibukun Ajiboy
or. Jacob Popoola or. Maxwell Omijie or. Paul Akinduti or. Ahuekwe Eze Ir. Oluwarotimi Aworunse	(Chair) Dr. Winnifred Ana Dr. Margaret Onih Mrs. Ibukun Ajiboy Mrs. B.T. Adekeye

Technical

Mrs Wunmi Oshamika, Mrs. Temitope O. Ajamu, Miss Akinyele Ayomide, Miss Samuel Esther, Mr Balogun Daniel, Mr Samuel Oyegbade

Local Organizing Committee

- Prof Solomon U Oranusi
- Prof Conrad A. Omonhinmin
- Dr Paul Akinduti
- Dr. Rotimi Aworunse

Registration	
Prof. Banke Ogunlana (Chair)	
Dr. Olubukola Oziegbe	
Dr. Yemisi Obafemi	
Dr. Adetutu Bello	
Dr. Adeola Benson	
Mrs. Uamai Imoisi Joan	
Accommodation/Transport	
Prof. Grace Olasehinde 'Chair)	
Dr Eghosa Ekhaese	
Dr Samuel Ejoh	
Dr Adedapo Adebusayo	
Mr Olugbenga Taiwo	
Mr Michael Ezekiel	
Sponsorship/Exhibition	
Mr. Olugbenga Taiwo (Chair)	
Dr. Eghosa Ekhaese	
Dr. Paul Akinduti Dr. Franklin Iheagwam	
Dr. Yemisi Obafemi	

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Welcome from the Biotech Cluster

I welcome everyone to this auspicious event and invite you, regardless of your inclination, to immerse yourself in the various activities lined up for the next three days. The keynote and other addresses will be thought-provoking and will set the pace for the various sessions throughout this meeting. I welcome us as scientists, businesses, policy makers and observers to the serene Covenant University campus.

The 44th edition and the vision setting theme of the Annual Conference of the

Nigerian Society for Microbiology and Annual General Meeting is strategic in the push for individual and national re-awakening and repositioning for global relevance in the knowledge of microorganisms, microbe-relevant indigenous, industrial, and research practices. It is pivotal to our attempts at actualizing the conservation and preservation of our collective microbial bio-heritage that holds immeasurable value for us as scientists, government, businesses and people.

The efforts to conserve the microbial heritage have not been conceited but rather discontented, fragmented and without any form of deliberate collective goals, objectives and targets whether as a group or as a professional society like ours or as a national agenda. Like most natural resources; biotic or abiotic, mineral, or otherwise; we have as a people, either abandoned or wasteful expend such, and our microbial heritage belongs to the former.

As a research cluster we strive to pursue tangible initiatives, collaborations, and networking to promote functional, productive and sustainable deliverables in our interactions; and one of focus amongst others is the conservation and preservation of our biodiversity in all its varied forms. This conference and its expected outcomes are testaments to such efforts as we work across the aisle to reach young as well as establi shed scientists. We have provided great reviews and have put in place, activities that will accommodate and interest everyone in the next days. In addition, the programmes such as the Bioinformatics workshop and the mentorship activity are innovative prongs to the conference series proposed to attract and sustain young scientists' participation at NSM conferences and we are certain the hybrid format will ensure an all-round participation.

You are welcome to the 44th edition of the NSM Conference series and we hope you will have a great time.

Professor Conrad A. Omonhinmin Co-Chair and Head, Biotechnology Research Cluster @ Covenant University

		Room 2: CUCIRF Seminar Room	Session Chairs: Prof. J. Arotupin /Dr O. A. Oyewole
	11:30 am – 2.30 pm	Climate Change Transitions and evolution of Microorganisms (Environment)	Hall Manager: Andrew Aladele / Ajao Demolu
		Room 3: PG Seminar Room Sustainability and Microbes in Bioeconomy (Industry)	Session Chairs: Prof. C.J. Ogbugbue Dr. M. Egharevba Hall Manager: Pelumi Oyesile / Kwarpo Zeendi
		Room 4: CApIC-ACE Seminar Room Post-COVID dynamics of Agricultural sufficiency and food security (Agriculture)	Session Chairs: Prof. A.B. Suleiman/ Dr. A.A. Ayoola Hall Manager: Samuel Oyegbade / Obadire Tobiloba
	2:30 pm – 2:35 pm	Announcement	Dr Y. Obafemi
	2.35 pm - 3.00 pm	LUNCH BREAK	
	3.00 pm – 5.00 pm	Bioinformatics Workshop: In Silico training for Students	GENOMAC Hub
	5.00 pm – 5.30 pm	Mentorship, Networking, Collaborations	LOC Students Sub-Committee
		Rapporteurs	Dr. Oniha M, Oshamika O, Uamai J.
		Day 4 – Thursday 27 th July 202	
	Time	Event	Presenter(s)
	9:00 am – 9:02 am	Opening Prayer	Dr Samuel Ejoh
	9:02 am - 9:05 am	National and CU Anthems	Studio
	9:05 am – 9:10 am	Welcome Address LOC Co-chair	Prof C.A. Omonhinmin
2023	9:10 am – 9:40 am	Sub-Theme POST-COVID DYNAMICS OF AGRICULTURAL SUFFICIENCY AND FOOD SECURITY	Prof. Lateef Oladimeji Sanni Professor of Food Science and Technology & Executive Director, NSPRI
	9:40 am - 10:10 am	Panel Discussion <i>Microbes, Food safety, and Security: Impact of</i> <i>Agricultural Policies</i> Moderator: Prof. O.O. Obembe	Panel of Discussants Prof. V.O. Nwaugo, Prof. M.D. Makut Prof. Ogunlana
È		Break Out - Technical Session(s)	
27th July 2023		Room 1: Biotech Cluster Room <i>Microbes, Microbiome, Antimicrobial resistance,</i> <i>and the emerging One-health (Health)</i>	Session Chairs: Prof. M.D. Mukhtar/Dr.S.A. Ejoh Hall Manager: Daniel Balogun / Memeh Emmanuel
	10:10 am – 12:10 pm	Room 2: CUCIRF Seminar Room Climate Change Transitions and evolution of Microorganisms (Environment)	Session Chairs: Prof. V.O. Nwaugo/Dr. P. Isibor Hall Manager: Andrew Aladele / Ajao Demolu
		Room 3: PG Seminar Room Sustainability and Microbes in Bioeconomy (Industry)	Session Chairs: Prof. E.S. Amadi/Dr. Anake Hall Manager: Pelumi Oyesile / Kwarpo Zeendi

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		Room 3: PG Seminar Room Sustainability and Microbes in Bioeconomy (Industry)	Session Chairs: Prof. Solomon Rotimi / Prof. S.A. Ado Hall Manager: Pelumi Oyesile / Kwarpo Zeendi
		Room 4: CApIC-ACE Seminar Room Post-COVID dynamics of Agricultural sufficiency and food security (Agriculture)	Session Chairs: Dr. Maxwell Omijie / Dr. F. Ahuekwe Hall Manager: Samuel Oyegbade/ Obadire Tobiloba
	3:25 pm – 3:35 pm	Announcement	Dr Y. Obafemi
	3.35 pm – 5.35 pm	Bioinformatics Workshop: In Silico training for Students	GENOMAC Hub
	5.35 pm – 6.05 pm	Mentorship, Networking, Collaborations	LOC Students Sub-Committee
	6:30 pm – 7:30 pm	Welcome Cocktail	LOC Co-Chairs/Welfare Sub-Committee
		Rapporteurs	Oyesola O, Aworunse O, Ajiboye I
		Day 3 – Wednesday 26 th July 2	
	Time	Event	Anchor(s)
	9:00 am – 9:02 am	Opening Prayer	Mr. Olugbenga Taiwo
	9:02 am - 9:05 am	National and CU Anthems	Studio
	9:05 am – 9:10 am	Opening	Prof. Timothy Anake Dean, College of Science & Technology, Covenant University.
	9:10 am – 9:35 am	Sub-Theme Lecture MICROBES, MICROBIOME, ANTIMICROBIAL RESISTANCE, AND THE EMERGING ONE- HEALTH	Prof. Anwalu Uba Professor of Medical Microbiology and Former Vice Chancellor, Bauchi State University.
26th July 2023	9:35 am - 10:05 am	Panel Discussion Roles of Nano-biology and Bio-engineering in One health, Human microbiome, Immune system, and non-communicable Diseases Moderator: Prof. G.I. Olasehinde	Panel of Discussants Prof. Olawale Adetunji, Prof. EEJ Iweala, Dr. Olayemi Akinnola
ſn -	10:05 am – 10:20 am	Business Talk	
, L	10:20 am - 10:35 am	Tea Break	
26t	10:35 am – 11:00 am	Sub-Theme SUSTAINABILITY AND MICROBES IN BIOECONOMY	Prof. Bartholomew Ndubuisi Okolo Professor of Microbiology (Bio-Process Physiology) & Former VC, Uni Nig. Nsukka
	11:00 am – 11:30 am	Panel Discussion Microbiology in an evolving economy and Biophysics of COVID-19 therapeutics: Industry Perspective Moderator: Dr. Olayemi Akinnola	Panel of Discussants Prof. V.O. Nwaugo, Prof. G.I. Olasehinde, Dr. Maxwell. Omijie
		Break Out - Technical Session(s)	
		Room 1: Biotech Cluster Room Microbes, Microbiome, Antimicrobial resistance, and the emerging One-health (Health)	Session Chairs: Prof. M.D. Mukhtar/ Dr Isaac O. Ayanda Hall Manager:

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Welcome from the Department

It is with great delight and gratitude to God that I welcome you all to Covenant University. (Hebron, the birthplace of Kings and Queens). I welcome all participants online and onsite. Thank you for your passion and commitment to partnering with us as an institution and with NSM. This year's (Hybrid) NSM conference, with the theme: "Microbial Bio-Heritage and the Post-COVID **Dynamics of Global Relevance**", is focusing on harnessing the unlimited potentials inherent in the diverse microbial world. Individuals with the practical knowledge and the soft skills needed to deliver on the theme and sub-themes of this conference have been carefully selected. Pre-conference hands-on training on molecular techniques, lectures, and mentoring sections will be featured for the students and future Microbiologists. Quality papers that will be presented in the technical sections will be packaged for Covenant journals, proceedings, and SCOPUS-listed journals. I am optimistic that this conference will provide practical solutions to some of the challenges bedeviling mankind.

Covenant provides a conducive environment, equipped laboratories, and robust library for research and collaborations, I am therefore pleased to welcome you all to NSM 2023 and urge all of us to interact and take advantage of this rich assemblage of experts, academics, authors, and stakeholders in the large world the microbes and microbiology.

I warmly acknowledge our Keynote Speaker Prof. Oyewale Tomori, and our guest speakers; Prof. Bartholomew Okolo, Prof. Auwalu Uba, Prof. La teef Sanni, and Prof. Jude Ogbulie. The excos of NSM ably led by her president Prof. M. B. Yerima; the management team of Covenant, ably led by our Vice Chancellor Prof. Abiodun H. Adebayo, our Deans, Heads of the Departments, and the Directors. I also acknowledge our partners, sponsors, and collaborators; Inqaba Biotech, West Africa Limited, Hospitest Laboratories Limited, Covenant University Strategic Business Services, Covenant University Centre for Research, Innovation and Development and several others.

Once again, on behalf of the Department of Biological Sciences, the Biotechnology Research Cluster, the College of Science and Technology, and Covenant, I welcome you to NSM-Ota 2023.

Thank you and be blessed.

Prof. Solomon U. Oranusi Co-Chair and Head, Department of Biological Sciences, Covenant University, Ota, Nigeria.



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Welcome From the National President -NSM

It gives me great pleasure to welcome everyone to the 44th Annual Scientific Conference and Annual General meeting of the Nigerian Society for Microbiology. The theme of the 44th Annual Conference is apt, considering the relevance of the science of Microbiology in the changing world.

We constructive

recommendations. We hope that the deliberations and recommendations of this Conference will have a significant impact on the future directions of economic development in Nigeria and beyond. This is particularly so, because the economy of most nations in the world is devastated by Covid-19 Pandemic. One of the key outcomes of our gathering today is a strategic alliance between the Nigerian Society for Microbiology and Covenant University Ota on the establishment of Microbial Culture Collection Facility for Nigeria and Africa.

This will no doubt open a new vista of economic opportunity and promote research for development. Microbial Resources are more than oil and other finite resources. They are miniature "Factories" that can produce substances of human, animal, and environmental value with high efficiency. This can be exploited for the benefit of mankind and the economy. Massive commercial production of BiofertIlizers, Biopesticides, Bio-enhancement agents for pollution control, Enzymes, hormonal substances, and many others can be possible. We are grateful to the Vice Chancellor of Covenant University - Prof. Abiodun H. Adebayo for his unique leadership disposition and foresight.

The economic recovery in Nigeria and beyond rely on exploitation of microorganisms. Both the pathogenic and the

Cheers!

Prof. M.B. Yerima, FNSM, FBSN President, NSM

have excellent non-pathogenic types are important tools in economic speakers from different resuscitation in the post-covid era. For example, the parts of the country and pathogenic types can be used to produce vaccines, test kits beyond that will do justice and other medical products which are now in high demand. to their respective topics. I We hope the vaccine need and other biopharmaceuticals for am sure we will have Nigeria will begin from our initiative with Covenant fruitful discussions and University. This Conference will address some of these recent advances in Microbial Technologies to identify the best approach to make Nigeria's economy sustainable and ensure food, health, and environmental security.

> Distinguished Ladies and Gentlemen, Microbial Resources surpass any other resources. It is, therefore, high time that government of Nigeria begin to exploit microorganisms in repositioning, restructuring, and revitalizing our economy; As this mark my last welcome address as the President of this prestigious Society, I wish to express my profound gratitude to members of NEC and entire membership of Nigerian Society for Microbiology for their support. It is worthy of note that the Microbiology Council of Nigeria is now awaiting assent from the President of the Federal Republic of Nigeria. All hands should be on deck to ensure this achievement.

> I finally thank the entire management team of Covenant University led by the Vice Chancellor- Professor Abiodun H. Adebavo for hosting us: The Local Organizing Committee for organizing this beautiful event and indeed the invited speakers for agreeing to be here. The society will be indebted to Prof. Solomon Oranusi and Prof. Conrad A. Omonhinmin and the Co-chairs and anchor and the rest of the team for their commitment and high sense of responsibility. We thank all the participants from all walks of life for being here also. I wish you happy deliberations.

		DAY 1 – Monday 24 th July 2023	
23	Time	Event	Anchor(s)
24 th July 2023	10.00 am - 5:00 pm	ARRIVAL	LOC Logistics Sub-Committee
	3.00 pm – 5.00 pm	Volunteer Orientation	LOC Secretariat
	DAY 2- Tuesday 25 th July 2023		
5	8:30 am – 8:50 am	Courtesy Call on the Vice Chancellor & His Team	NSM NEC, LOC
	9:00 am – 9:02 am	Opening Prayer	Chaplain /Dr Eghosa Ekhaese
	9:02 am - 9:05 am	National and CU Anthems	Studio
	9:05 am - 9:10 am	Opening Remarks LOC Co-Chair	Prof A.C Omonhinmin
	9:10 am – 9:30 am	Welcome Address: LOC Co-Chair NSM President	Prof. S.U. Oranusi Prof. M.B. Yerima
	9:30 am – 9:40 am	Vice Chancellor's Remark and Conference Opening (Declaration)	Prof. Abiodun H. Adebayo
e	9:40 am – 10:10 am	Keynote Address MICROBIAL BIO-HERITAGE AND THE POST- COVID DYNAMICS OF GLOBAL RELEVANCE	Prof. Oyewale Tomori Professor of Virology, Educational administrator, Chair, the Board of Biovaccines Nigeria Ltd.
	10:10 am - 10:40 am	Panel Discussion Relevance of Microbial Bio-heritage and meeting the SDGs Moderator: Prof. Obinna Nwinyi/Dr. Aminu Bukar	Panel of Discussants Prof. Justus T.K. Eniola, Dr. Angela Eni Prof. (Mrs.) Ekwealor
502	10:40 am - 10:45 am	Goodwill message (CUCRID Director)	Prof. K.O. Ajanaku
ž	10:45 am - 11.00 am	Photographs and Tea break	Media & Corporate Affairs
- T	11:00 am - 11.15 am	Business Talk	· · · · · · · · · · · · · · · · · · ·
25 th July 2023	11:15 am – 11:40 am	Sub-Theme Lecture: CLIMATE CHANGE TRANSITIONS AND EVOLUTION OF MICROORGANISMS	Prof. Jude-Anthony Nnama Ogbulie Professor of Environment Biotechnology and Public Microbiology.
	11:40 am – 12:10 pm	Panel Discussion Climate Change Transition and Sustainable Environment Moderator: Dr. Eghosa Ekhaese/ Dr. Odumosu	Panel of Discussants Prof. S.A. Ado (NSM), Prof. Obinna Nwinyi, and Prof. V.O. Nwaugo
	12:10 pm – 12:25 pm	LUNCH BREAK	
		Break out - Technic	
		Room 1: Biotech Cluster Room <i>Microbes, Microbiome, Antimicrobial resistance,</i> <i>and the emerging One-health (Health)</i>	Session Chairs: Prof. Alexander Odaibo/Prof. A.B. Suleiman Hall Manager: Daniel Balogun / Memeh Emmanuel
	12:25 pm – 3.25 pm	Room 2: CUCIRF Seminar Room Climate Change Transitions and evolution of Microorganisms (Environment)	Session Chairs: Prof. Olubanke Ogunlana / Dr. Benedict Agoha Hall Manager: Andrew Aladele / Ajao Demolu

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Professor Lateef Oladimeji SANNI

Lateef Oladimeji Sanni is a Professor of Food Science and Technology. He obtained his master's and PhD Degrees in the Department of Food Technology, University of Ibadan in 1993 and 1999.

He has over 27 years of experience in research, consultancy and collaborations as a postharvest expert on tropical root crops implemented mainly by the International Institute of Tropical Root Crop and Natural Resources Institute, UK. He has been a project leader in multi-million-dollar EU/Gates Foundation-sponsored projects since 2008 till date. He is the current Executive Director of the Nigerian Stored Products Research Institute (NSPRI), Ilorin.





Professor Jude-Anthony Nnama OGBULIE

Jude-Anthony Nnama Ogbulie is a Professor of Environment Microbiology. He obtained a doctorate in Microbiology in 1995 with specialisation and interest in Environment Biotechnology and Public Microbiology.

He is currently the Director of the Institute of Environmental Health and Environmental Justice and the Deputy Director Sustainable Social- Development, FUTO/World bank Centre of Excellence in Sustainable Procurement, Environmental and Social Standards. And an honoured Fellows of the Nigerian Environmental Society (NES) and the Nigerian Society for Microbiology (NSM). He has authored over 100 journal articles, 13 Chapters, 4 Books and 8 reports.



44th Annual Conference of The **Nigerian Society for Microbiology**



Covenant University, Ota

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