



HackBio Internship

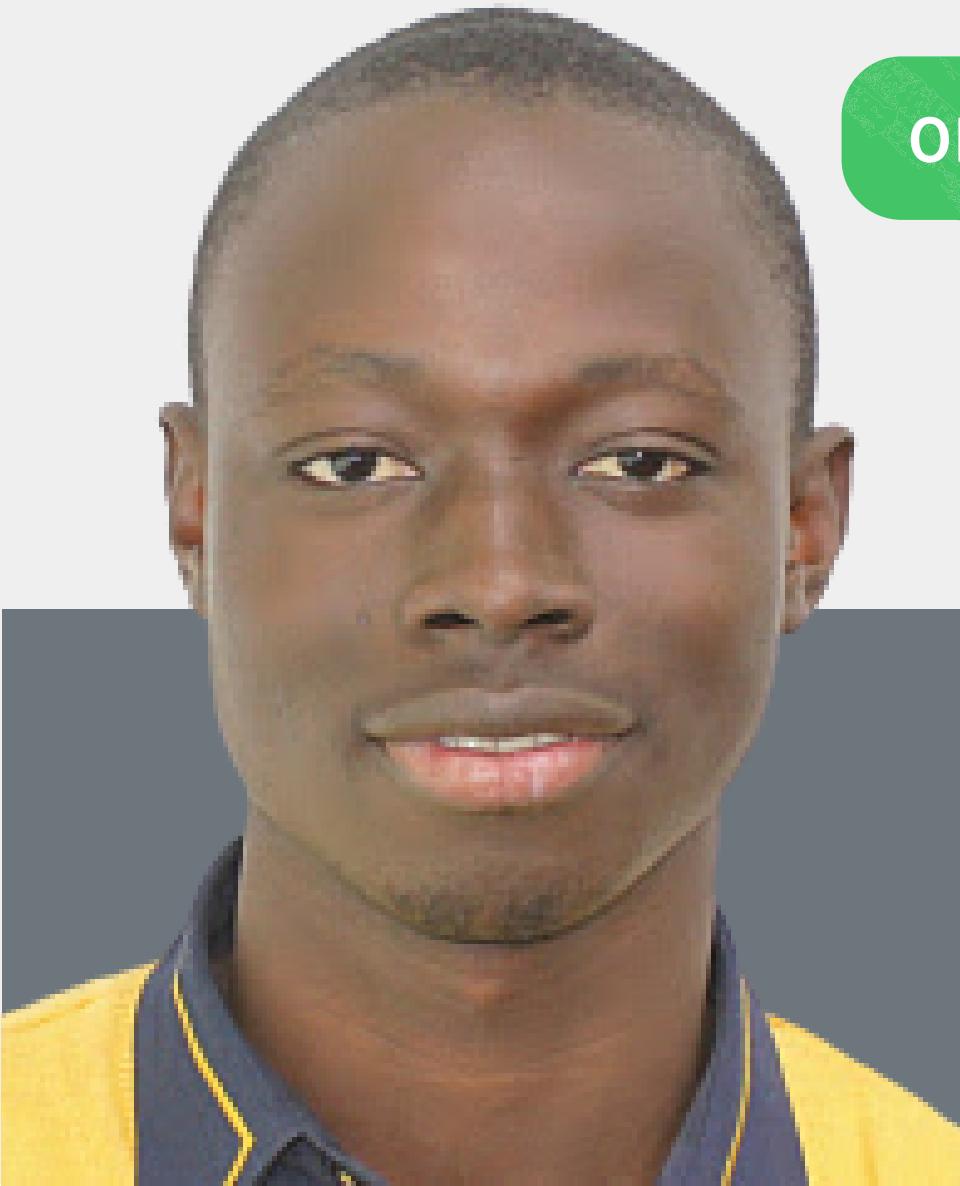
Final Presentation & Awards Day

2020 Cohort-Book



HackBio I

Cover: Karan Kumar, PhD (India)



OPENING REMARKS

Accept my hearty congratulations on the successful completion of this internship. We began the internship with over 700 interns, 5 mentors and today, we are left with about 90 interns. This shows how rigorous and effective the learning curve has been. Our goal was to rethink the bioinformatics experience for starters, and I am glad to announce that our goals were met. As you continue reading through this book, please pay key attention to the testimonies of our interns because this is our joy and pride. This is not just a dream come through for them, but also for us.

Wale OGUNLEYE

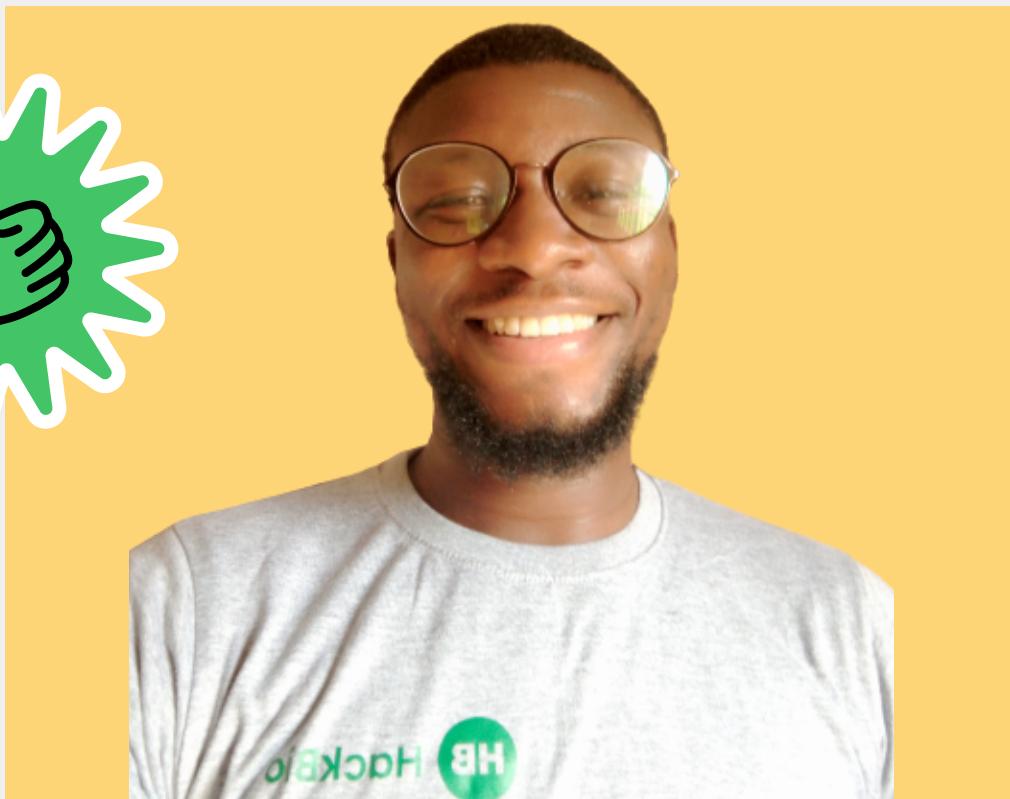
Convener



The Organizing Team

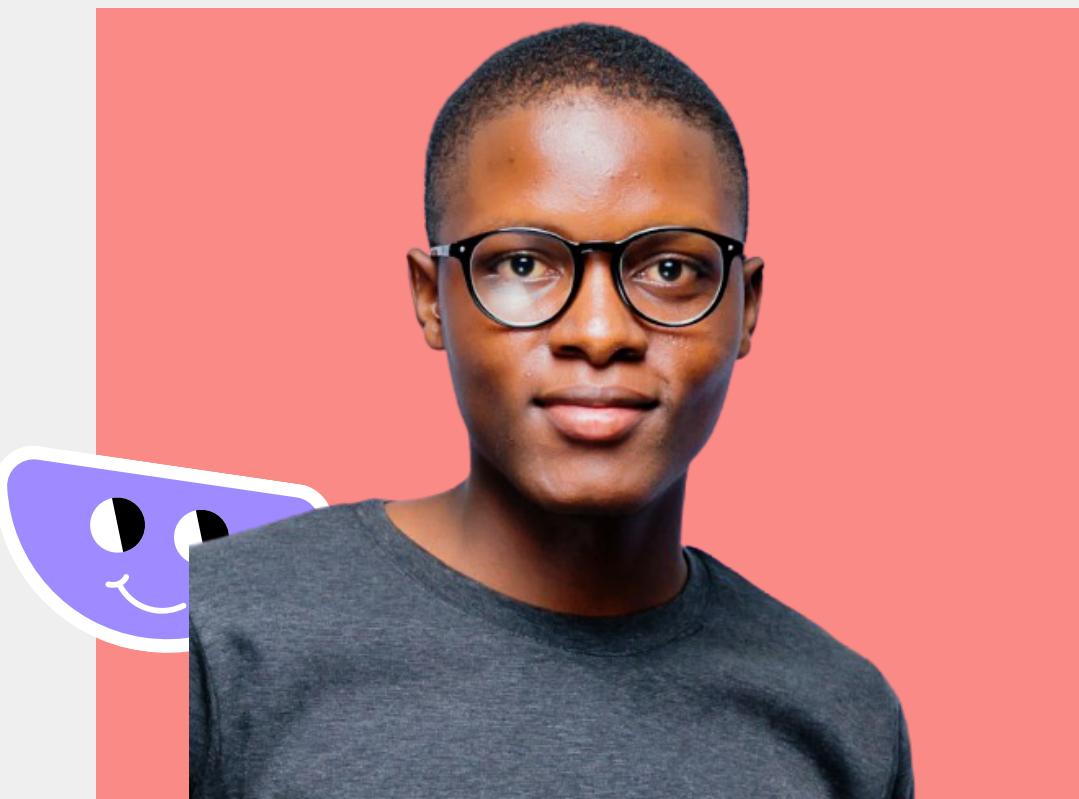
HackBio's Core Team

HackBio Internship



Samson ADEGBE

Head of Communications



**Jekayinoluwa
OLABEMIWO**

Program Manager



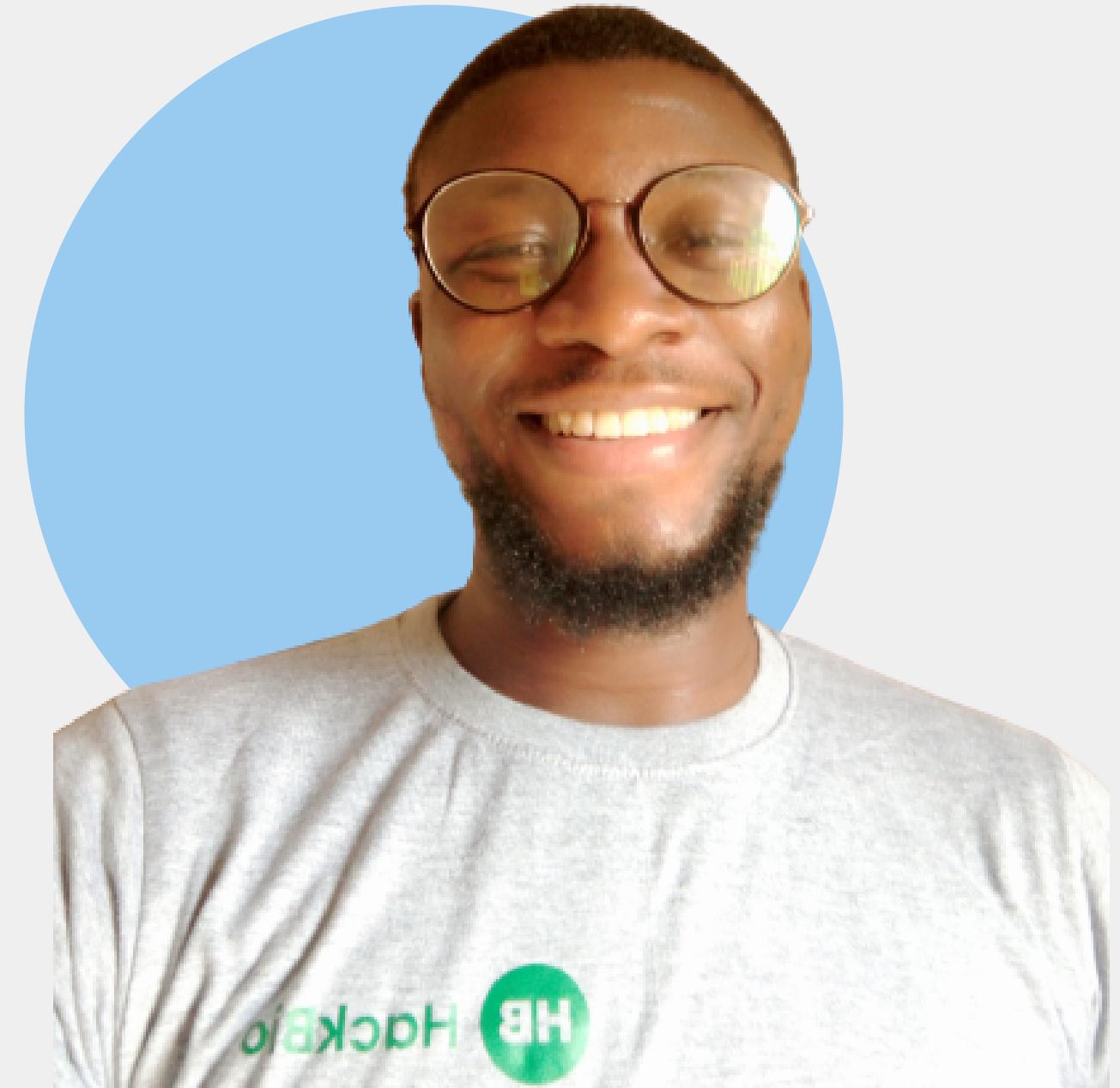
Emmanuel BABATUNDE

Head of Finance and Budget



HackBio Internship

This one month of active research and skill acquisition has been amazing for both the organizing team and interns. And truly our goals have been met. We won't stop here, we will keep empowering and impacting interns. Furthermore, we are grateful to our mentors. Their impacts have been amazing. And to our sponsors, we are grateful for their resources and time. Finally to the interns, Congratulations and don't forget to do exploit with your skills.



Samson Adegbé





Jekayinoluwa OLABEMIWO

This one month of active research and skill acquisition has been amazing for both the organizing team and interns. And truly our goals have been met. We won't stop here, we will keep empowering and impacting. Congratulations to the HackBio 2020 cohort.

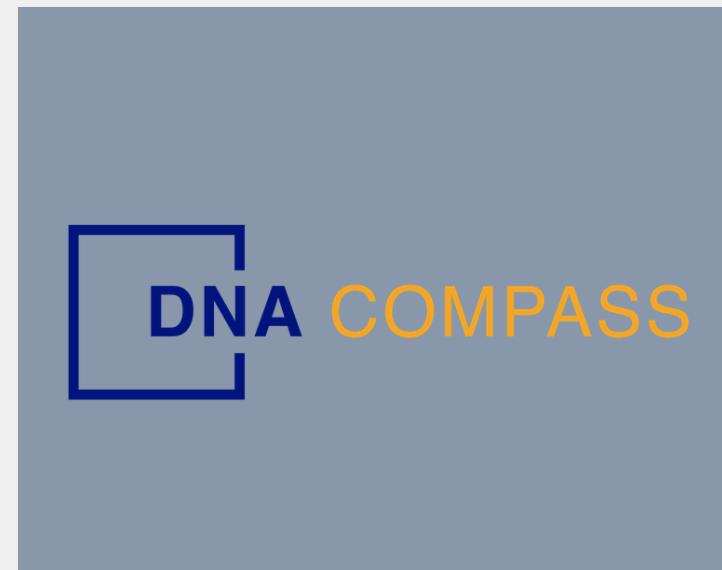


Class of 2020



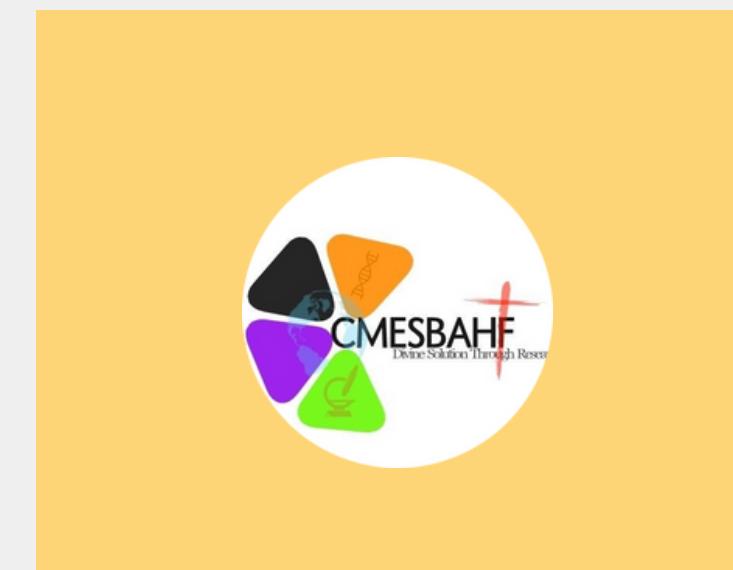
Fantastic Sponsors





DNACompass

<https://www.dnacompass.com>



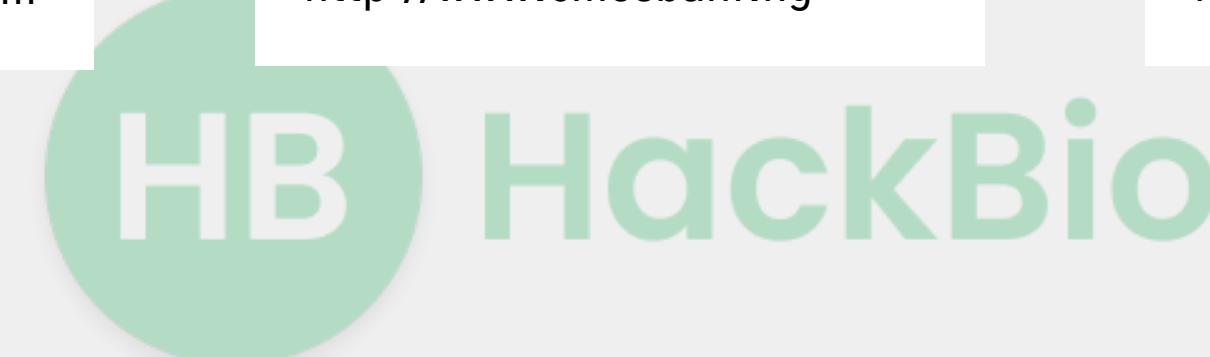
CMESBAHF Nigeria

<http://www.cmesbahf.ng>



BIOTRUST Scientific

<http://biotrust.org.ng>



Partners:



<http://usegalaxy.eu>



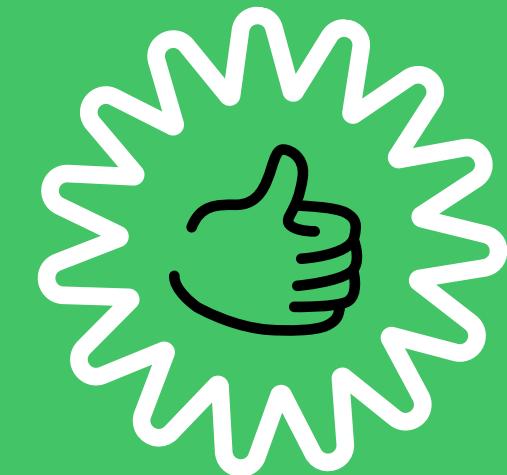
NELIREF



HackBio Internship

Wonderful Mentors

Class of 2020



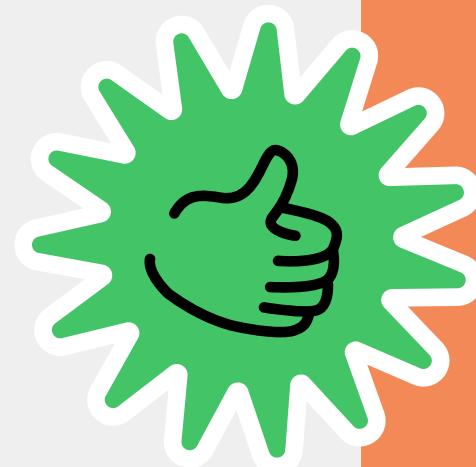


HackBio Internship

Human imagination and ability to optimally use resources will make more difference in future of Biomedical Research. I see the pandemic as an opportunity for mankind to re-learn sustainability in innovation. For example can we explore why certain HLA alleles more effectively eliminates the virus ? Rather than looking for a vaccine, that eventually fails to protect from this rapidly changing virus. I am sure the future interns of Hack-Bio would definitely have an answer .



Mentor, Vaccine Development



Surajit Debnath, PhD (India)



Sarah Carl PhD (Switzerland)

It's been a great experience to be a mentor for the HackBio Internship 2020! I started off not knowing quite what to expect, and I was impressed by the quality of work produced by the interns. More importantly, I've been really impressed by the teamwork, collaboration, and spirit of initiative that I've seen. HackBio has brought together a diverse group of people from around the world, and, in a short time, forged a community. Congratulations to the organizers and interns, and keep up the good work!

Mentor, Genomics and Data analysis





HackBio Internship

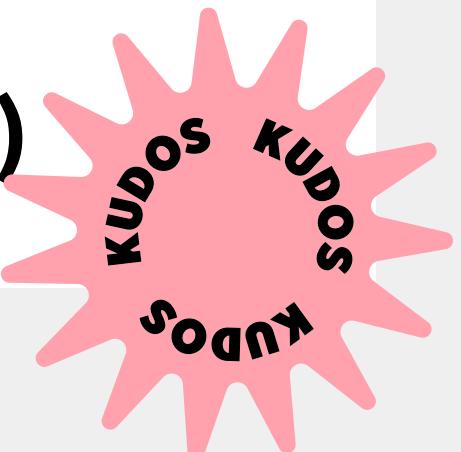
The HackBio virtual internship (HBI) is unquestionably an incredible platform for fast pace learning. HBI was able to integrate both fledgling and experts in bioinformatics from diverse spheres of science. During the internship, I perceived positive energy from a number of the interns: Undergraduates to Postgraduates to Senior academics. The atmosphere was filled with a lot of enthusiasm and suspense; Teams collaborating and striving for greatness. Indeed, I made a lot of friends worldwide, added knowledge from other fields of bioinformatics. I am delighted to be part of this gathering and looking forward to Innovative science and excellent collaboration.



Mentor, Drug development and Cheminformatics



Niyi Adelakun (Nigeria)



GOOD
JOB



**Ojochenemi Enejoh, PhD
(Nigeria)**

"Better is the end of a thing, than the beginning thereof!..." The internship was indeed both a thrilling and drilling experience for participants. Many started the race, but very few were able to make it through. Kudos! to all who made it to the end. We have indeed all accomplished something the world has never experienced before, and are set to do more!

**Mentor, Drug Development and
Medicinal Chemistry**



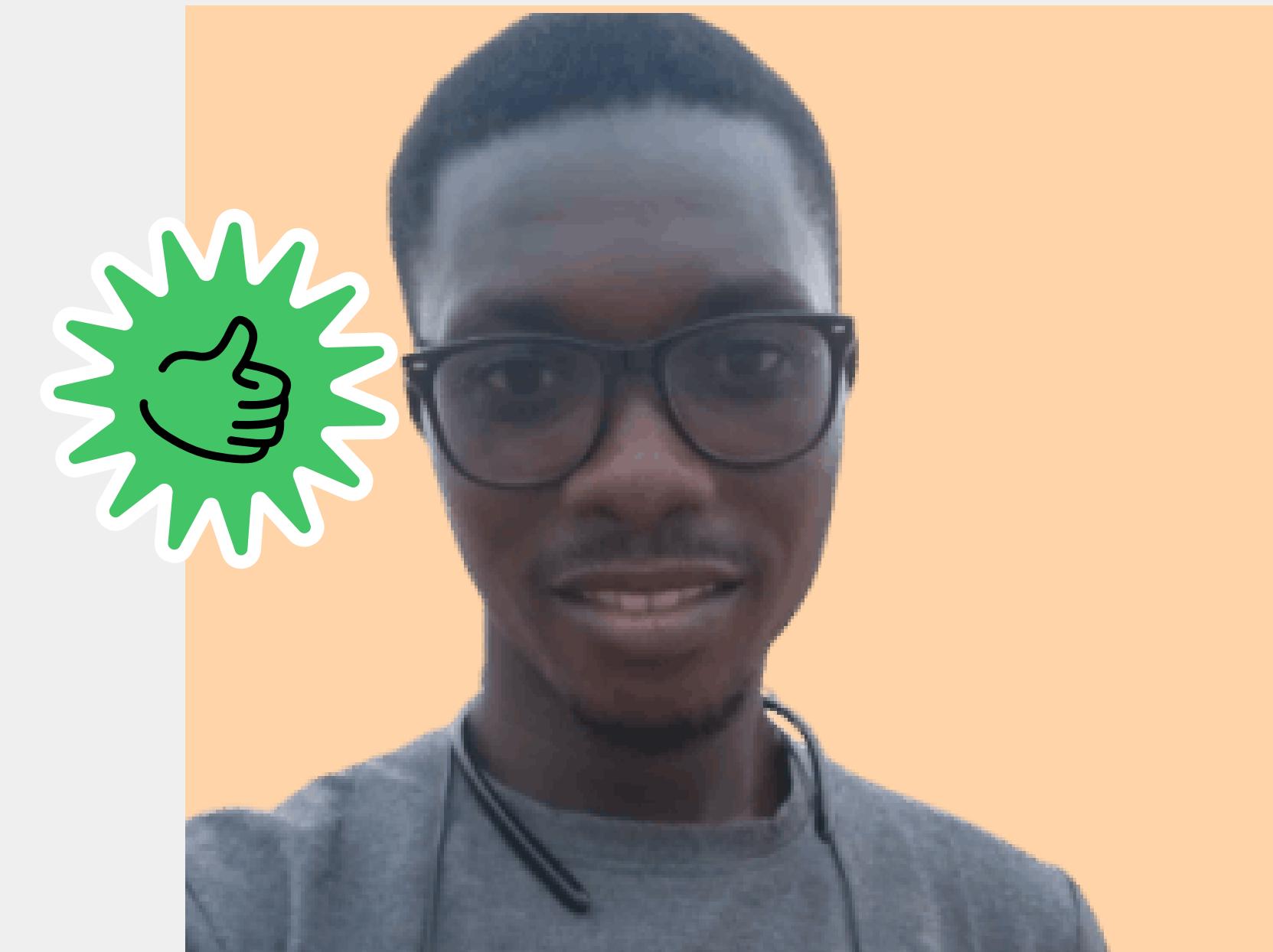


HackBio Internship

For me, the Hackbio Bioinformatics Virtual Internship was a challenging experience. Before now, I had not participated in a virtual internship, not even as an intern. HackBio allowed me to work with like-minds in science, who shared my penchant for computer-assisted drug development. The diversity was quite inspiring and I will forever be grateful for the privilege to mentor newbies in Bioinformatics.



Mentor, Drug development and Cheminformatics



Mike Arowosegbe (Nigeria)



HackBio Internship



The Interns



Drug Developers (Team ONE)

Binding affinities and toxicity properties of metabolites from 19 different medicinal plants were virtually analysed (in silico) against SARS-CoV-2 host and viral targets, assisted by simulation studies. Our results show phytochemicals Ochnaflavone and Licoflavone B, from Japanese Honeysuckle and Licorice respectively, have potential multi-target inhibition properties for nsp9, furin, ORF3a and IL-6 and can be promising natural inhibitors of COVID-19



**Omobolanle
Abiodun**



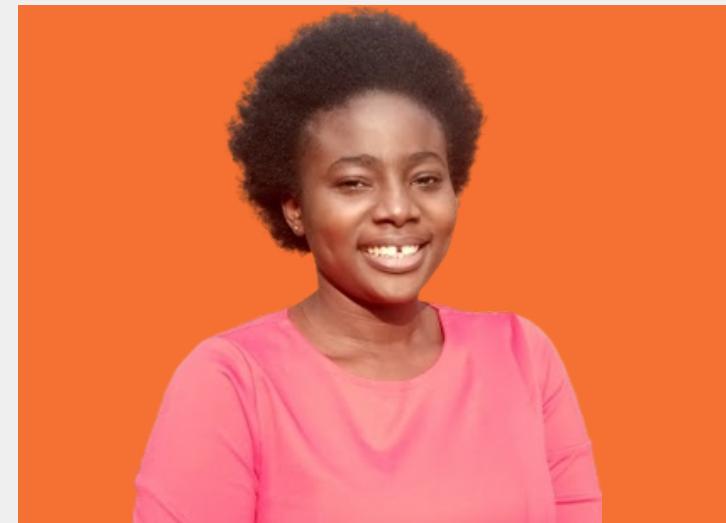
Suritra Bandyopadhyay

New Skills: Multiple Sequence Alignment, Homology Modeling



Ravindran Jaganathan

New Skills: Bioinformatics research, digital collaboration



Blessing Ogboo

New Skills: Research, Python Programming



Emmanuel Attah

New Skills: C, Autodock vina



Omobolanle Abiodun

Proposal writing, ADMET



Adeola Kola-Mustapha

Virtual collaboration, Molecular modelling



Ankita Kumari

Drug development, GitHub



Lawrence, Edemhanria

Collaboration, Molecular docking



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Drug Developers (Team TWO)

We focused on five proteins in COVID-19, which plays an important role in causing the disease. These protein targets are docked against already existing drugs (medicine) to check if they can inhibit the proteins. Then some of best drugs (medicine) are selected and ADMET properties are checked. ADMET properties were analysed to check safety of the drugs. Our prediction shows that more than 3 of those medicines worked better than some of the already used medicine such as hydrocholoroquine and remdesivir.



Annapoorna
C



Annapoorna C

Bash Scripting, Drug development



Ijeoma Duru

Molecular Docking, Virtual Screening



Akinlalu, Alfred

Molecular docking, science communication



Funmilayo Afolayan

Molecular Docking, GitHub



Yakumbur, Donald

GitHub, Drug discovery

HB HackBio

Vaccine Developers

Considering the current failed efforts in vaccine development against the coronavirus, the goal of our project was to identify novel sequences from the coronavirus proteome and predict their stable structures with high immunogenicity scores, so that they can be used to develop vaccines that induce a strong immune response from the host.



**Siddhant
Sharma**



Siddhant Sharma

Homology Modelling, Scientific Collaboration



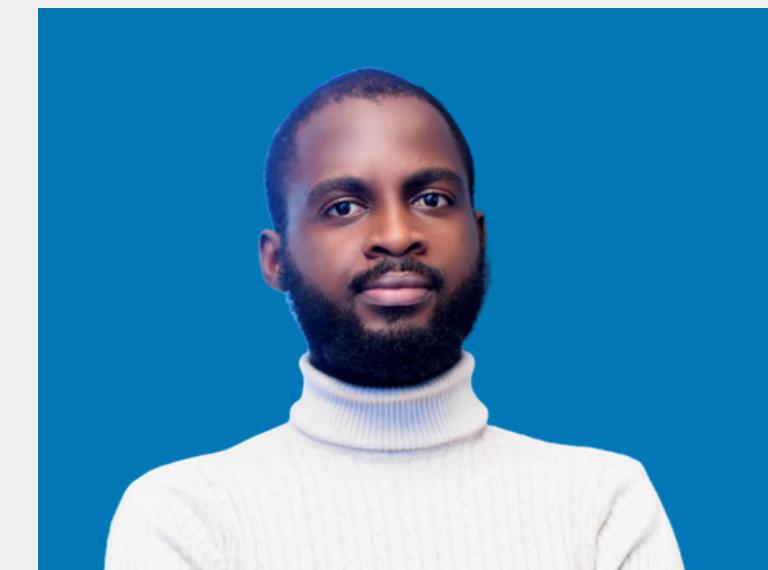
Ojo-Rowland Olawale

Homologous modelling, R programming



Opelopejesu Owolabi

Analysis of biological data, HLA-Protein prediction



Folagbade Abitogun

Immuno-informatics, Proteomics



Eva Akurut

Protein modelling, molecular docking



Rajvavee Srivastava

Immuninformatics, Research



Nirvana Munir

Homology modelling



Abayomi Giwa

Python, Vaccine design



HB HackBio



Lawrence Macalalad

Homology Modelling and Protein Interactions 



Victoria Ekundayo

3D protein structure modelling,
molecular docking 



Viktoriia Komarysta

3D protein modeling, in silico
vaccine design 



Phuong Thao Tran

Unix command line, Protein
modelling 



Aminu Halimat

Protein docking, protein homology 





Genomics (Team ONE)

Research Summary

- Results revealed individuals with ages between 25-50 years have higher immune response to the infection.
- Disease fatality was higher in patients above 50 years.
- The Case fatality ratio (CFR) for ages above 50 years was about twice greater (11.6%-26.8%) than that for ages below 50 years (0-6.6%)

**Joseph
Igbokwe**



Sola Olorunfemi
Genome analysis, GitHub



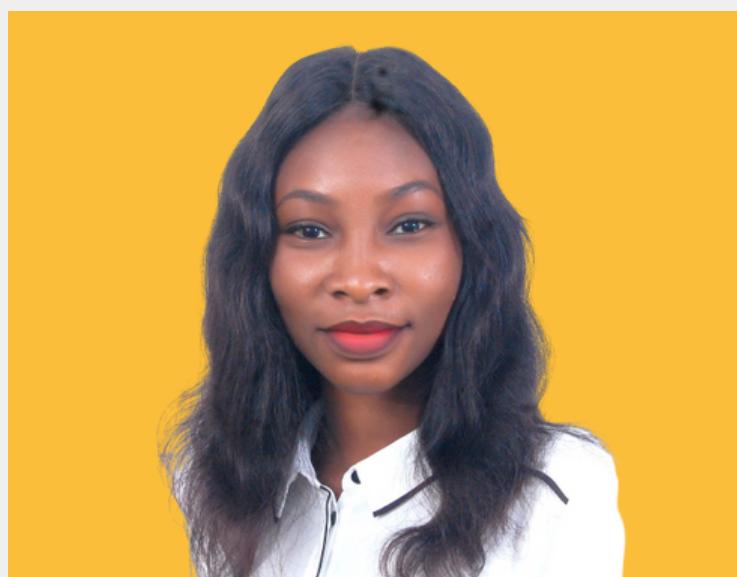
Mukul Sharma
R programming, phylogenetics



Ayodeji, Adepoju
MSA, Phylogenetics



Ahmed El-Gammal
Team work, self learning



Oluwatobiloba Adebayo
Virtual collaboration, NGS



Harinath.S
Team work , critical thinking



Humaira Marzia Alam
Python, Github



Shahida Ferdousee
GitHub, Team Collaboration



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Josiah Peter

Phylogenetic Analysis, Bash Scripting



Mosadoluwa Agbonyin

BioPython, R programming



Adetutu, Oluwasanmi

Collaboration, Programming skills



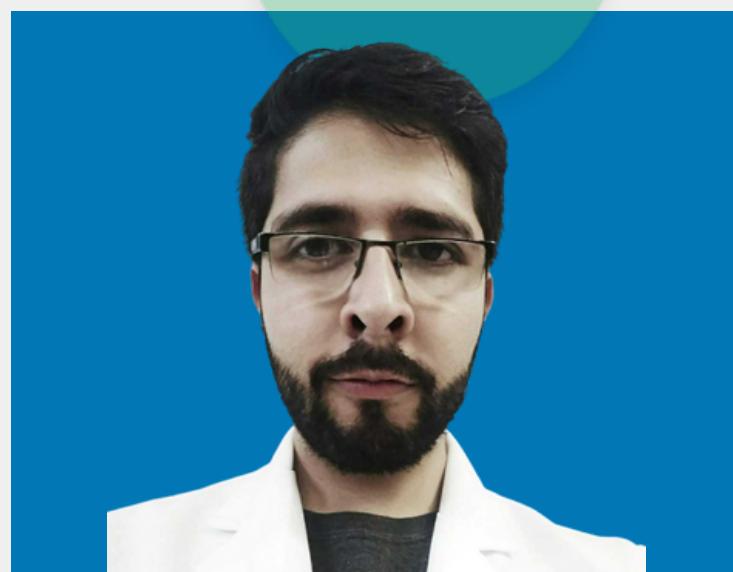
Ahmed Mamdouh

Biopython and Perl programming



Alexandra Sánchez

R programming , GITHUB



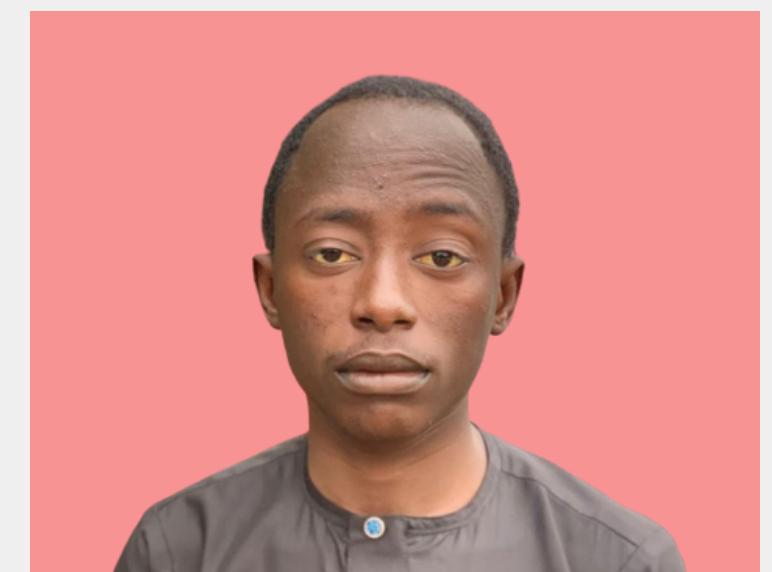
Jairo Hurtado

Github, R-skills



Joseph Igbokwe

Honorable Mention



Sheriff Agbaje

Honorable Mention



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Pawan, Verma

Leadership, Communication



Olaleye Olutunde

Comparative genomics,
Phylogenetic



Sarah, Oladejo

Biopython, phylogenetics



Abass Ohilebo

Leadership, Scripting



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Wilson Gbedema

Sequence Alignment, Genomics



Pavlo Hrab

Github usage, shiny apps
development



Meera K.

Git hub, R programming



Oluwaseunmi Shodunke

Genome analysis, Teamwork





Semilogo Sonaike
Bash Scripting, Genomics



Rasha Elkaffas
Comparative genomics,
Phylogenetics



Tracy-allen Ezechukwu
Software usage, Phylogenetics



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Genomics (Team-two)



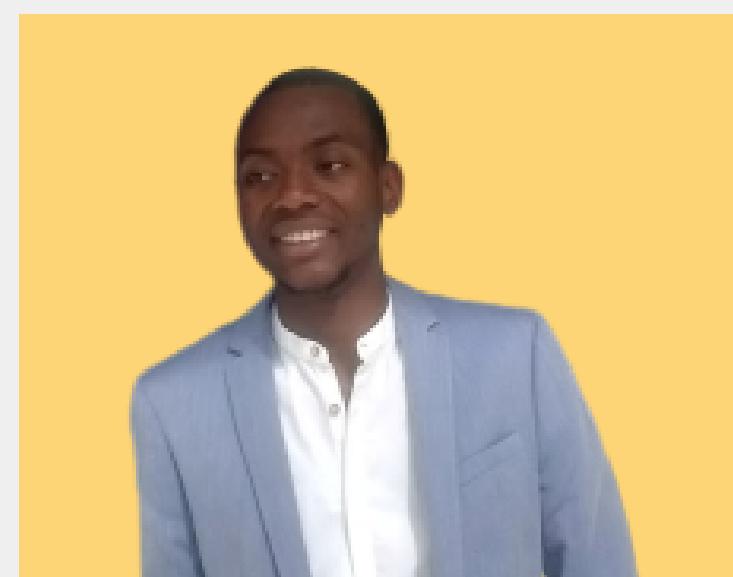
**Caroline
Melo**

Research Summary

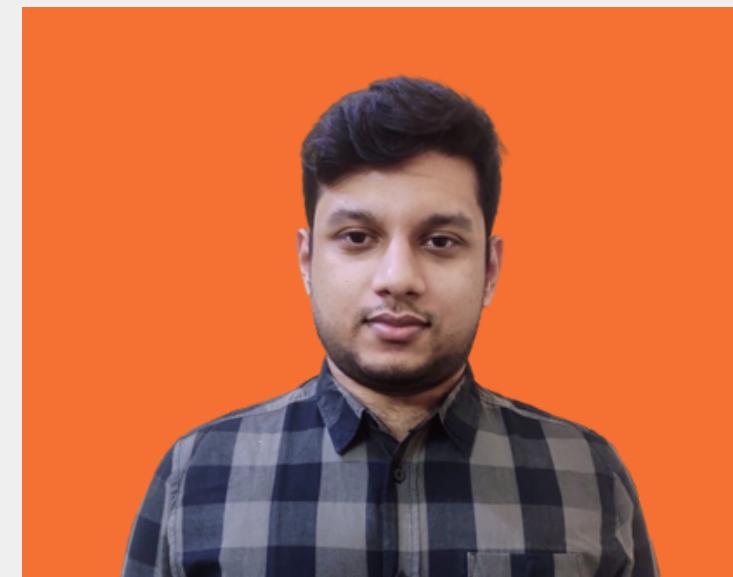
Transcriptomic profiling from publicly available RNA-seq data revealed a site-specific immune response in COVID-19. Host response was found to be cellular-mediated in nasopharyngeal samples and humoral-mediated in PBMC samples. CXCL13, IFIT3 and GABRE were upregulated and HSPA1B was downregulated in both sample groups. They could be explored as potential biomarkers of SARS-CoV-2 infection



Olayemi, Rotimi
Proposal, Python



Emmanuel, Olajide
Bash programming, Genomics



Jabale Rahmat
R programming, Github



Caroline Melo
Team work, github



Karan Kumar
R-programming, Transcriptomics



Gracious Mwandira
Manuscript writting,
transcriptomic



Ridwanullah Abubakar
Programming, manuscript writing



Abdulazeez Giwa
Honorable Mention



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Umar Ahmad
Javascript, Julia



Khatendra Reang
proposal writing, R language

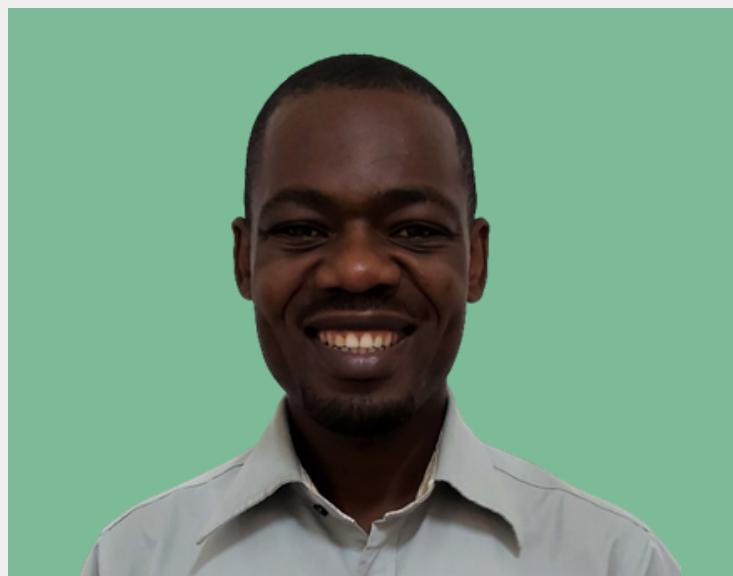


Winfred Gatua
RNA Seq Analysis, Collaboration



Monsurat Ibironke

Programming, Multiple Sequence
Alignment



Leonard Uzairue
Database, R for Genomics



Olalekan Akadiri
Genomics, R



Stephen Kanyerezi
Version control, Transcriptomics



Dina Aly Mahmoud Aly
Writing



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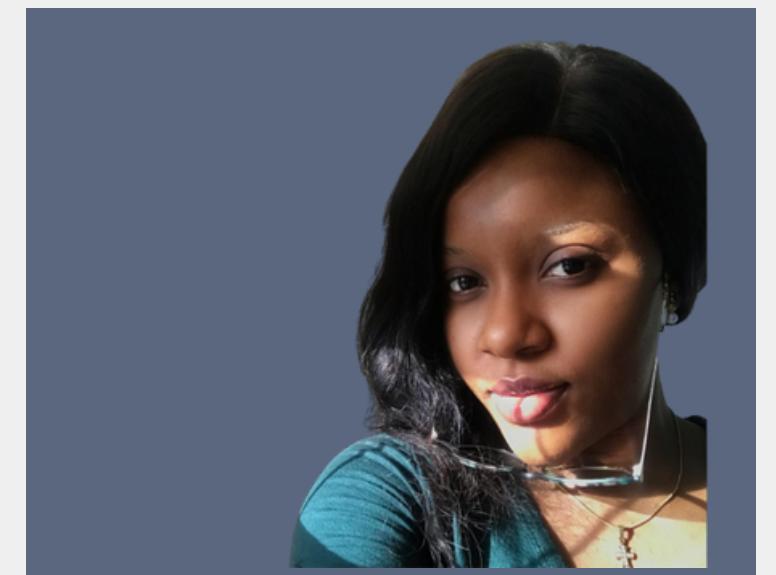
Ifeoluwa Adewunmi
Writing, Data Visualization



Mujib Abisogun
FASTQC, BLAST



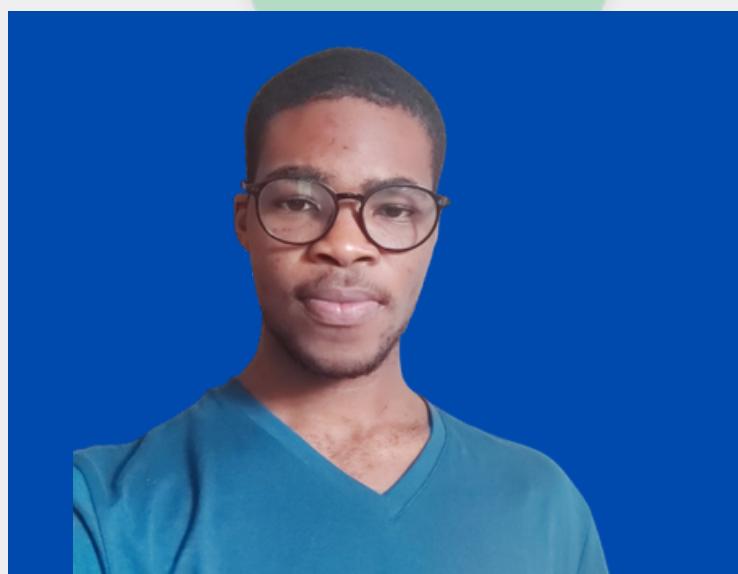
Oyewumi, Akinpelu
Writing, FastQC analysis



Ezinne George
Python, Teamwork



Maruf Ahmed Bhuiyan
Bash scripting, Transcriptomics



Oluwapelumi, Adejinmi
Writing, Transcriptomics



Priscilla Abechi
Github , Python



Mahmood Usman
Bash, FASTQC



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Honorable Mentions





Winifred Gatua

Most Impressive Team Lead



Siddhant Sharma

Most Resourceful Person



Ijeoma Duru (PhD)

Winner, Women in Stem Video Challenge





Pavlo Hrab

Best Backstage Worker



Pawan Verma

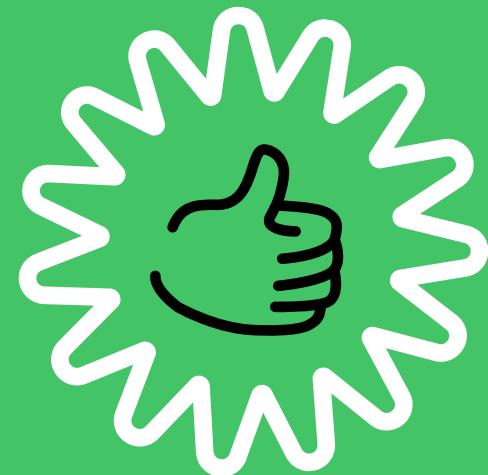
The Extra-Mile Person





HackBio Internship

Testimonials





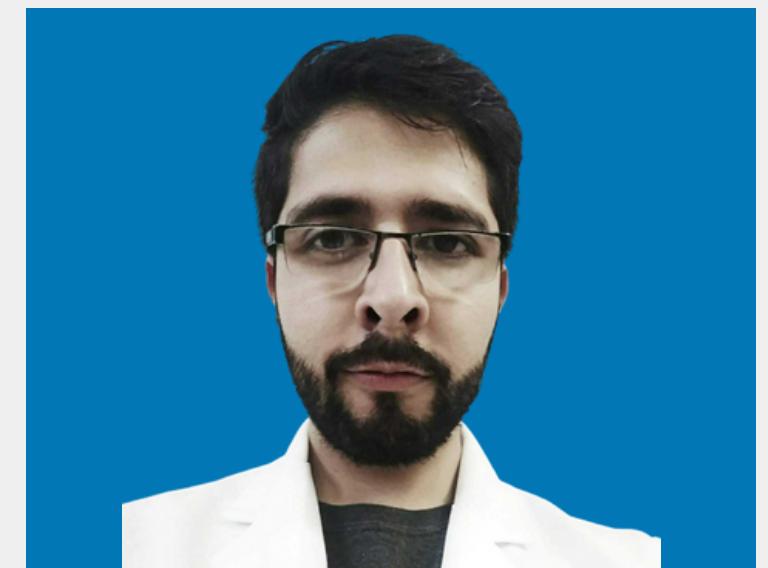
Karan Kumar



Adeola Kola-Mustapha



Jabale Rahmat



Jairo Hurtado



The most rewarding aspect of HackBio internship has been collaborating with people from diverse disciplines and learning from all their collective experiences. Given an opportunity, I would choose HackBio again. I can't wait to volunteer in forthcoming internships and any other activities organized by HackBio.

I found Hakbio internship remarkably interesting and quite insightful. I am amazed at the whole lot of computational technology infused into modern science and healthcare. The ability to engage in purposeful virtual team collaboration and apply molecular modelling to drug discovery are my two top additional skillsets benefit from this internship.

HackBio provided me with a platform with experts in the field who helped me immensely to sharpen my knowledge and achieve new skills. Working in a collaborative manner in this internship, I got acquainted with tools like MAFFT, FASTREE, GITHUB and GALAXYserver.

Hackbio intership has given me the opportunity to share and learn knowledge in bioinformatics with other scientists, using platforms as git-hub, r-environments, focusing our e-forces on team collaboration. What makes it really hard because we're from different countries and we didnt have a fixed schedule.

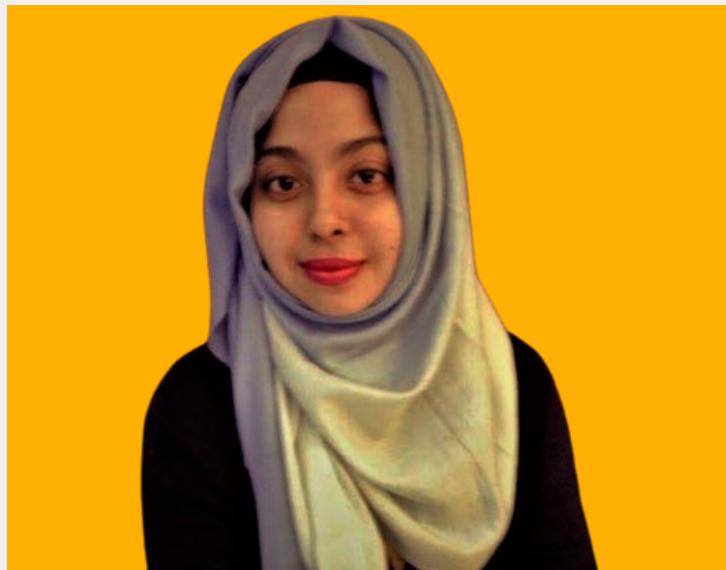
Hakbio HackBio



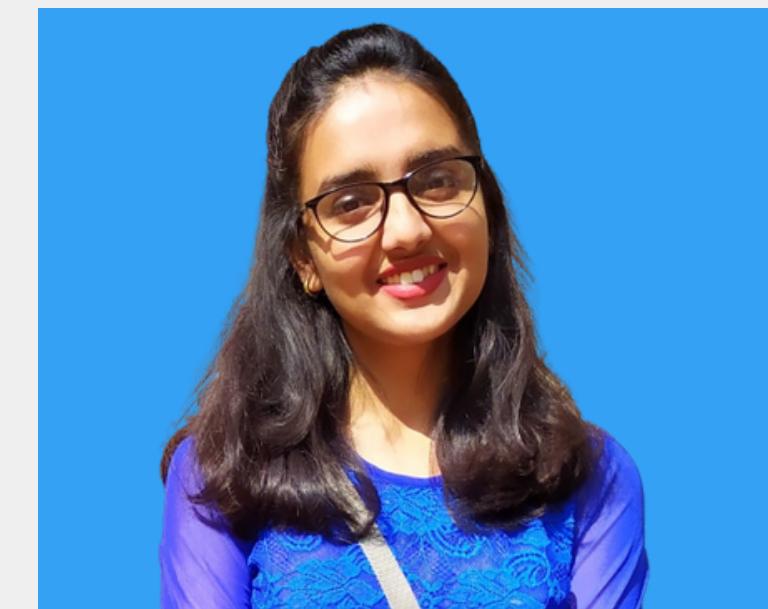
Mukul Sharma
Honorable Mention



Ahmed Mamdouh



Humaira Marzia Alam



Shahida Ferdousee



HackBio

As I am novice in the field of genomics and bioinformatics, I saw a good opportunity to learn the basics of the field when I got a chance to do one month internship with HackBio. The mentors were always helpful and supportive in telling and explaining the problem as well as solutions to make us understand clearly.

I found a post on FaceBook and now it has changed my life. I sign in immediately and was waiting for acceptance. When I get the acceptance email and joined the Slack channel I was shocked. A new style of learning was applied. So far, I have learned to be one of a team. I enjoy my time with every task and I love this internship.

Overall, I have enjoyed every bits and seconds of the program. I hope, the experience I have gained from working so close with a team and expert mentors will be useful throughout my life as I want to pursue my career as a researcher of life science in the field of genomics.

It has been a fantastic experience during the internship to learn about Bioinformatics and gain knowledge of genomics. The best things I've learned in the journey were various tools and technologies in bioinformatics, better communication, and teamwork. I thank Hackbio very sincerely for giving me an opportunity.

Academic Spin-offs

Pre-prints, Depositions, Collaborations



Pre-print

Polypharmacology of Specific Medicinal
Plant Metabolites against SARS CoV-2
targets and Molecular Dynamics
Evaluation of NSP9 RNA-replicase

Pre-print

Transcriptomic dysregulations
associated with SARS-CoV-2 infection
in human nasopharyngeal and
peripheral blood mononuclear cells
samples.

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Pre-print

COVID-19 Mortality Risk Assessment
Among Various Age Groups Using
Phylogenetic Analysis

Pre-print

Landscape of HLA-1 binding
propensities of undefined peptides on
the COVID19 Proteome: "A Needle in
the stack strategy

Pre-print

Drug Repurposing Against SARS-CoV-2: A High Throughput In-Silico Study Of FDA-Approved Drugs

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Collaboration

African Galaxy Community: Building a Galaxy server for African Researchers

Data Deposition

Protopedia: Optimized HLA variants
[MCULE: 521 Phytochemicals](#)

Collaboration

DNACompass: Genomic Infrastructure for accelerating precision medicine

HB

Non-Academic Spin-offs

Networks, Collaboration, Communities, StartUps



Start-Up

HackLab: Genomics for precision
medicine

Network

A resilient bioinformatics community on
Slack

A green circular logo containing the letters "HB" in white.

Software

A shiny app for the calculation of ODD-
 RATIOS by Pavlo Hrab (Ukraine)

Communities

African Galaxy Community: Building a
Galaxy server for African Researchers



HackBio Internship

CLOSING REMARKS

It's been an honor to be among this huge accomplishment. I believe we've all had nice time here as we've both learnt and earned.

Be sure to watch out for more and better oncoming version HackBio. Stay tuned.



Emmanuel BABATUNDE

Head of Finance & Budgeting

Reach out to us!

Website
linktr.ee/hackbio

Mail:
hackbio2020@gmail.com

YouTube

Medium

LinkedIn

Twitter

HB



Congratulations!

