AFRICA SCIENCE BUSKERS FESTIVAL

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2021 Africa Science Buskers Festival

Event Guide

Virtual Africa Science Buskers Festival 2021
28 - 31 July

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WELCOME MESSAGES

Knowledge Chikundi
Founder, Africa Science Buskers Festival

Dear young scientists, observers, supporters, teachers and parents,

I am privileged to welcome you to the programming of the 2021 Virtual Africa Science Buskers Festival.

Congratulations to the 200 finalists whose extraordinary work we are celebrating this year. The finalists of the 2021 Africa Science Buskers Festival come from the following countries: Zimbabwe, Zambia, Malawi, Botswana, Tanzania, South Africa, Nigeria, Tunisia, Nepal, Indonesia, Spain, Turkey, USA, Mexico and Brazil. To the finalists, please enjoy this event and celebrate your accomplishments. I know it has taken a lot of hard work and effort to make it, especially this year again under the pressures brought by the COVID-19 pandemic. By managing to work on your projects under pressing conditions, you have demonstrated resilience, a remarkable drive and a deep passion to solve grand challenges and for science communication, and these qualities are marks of our brighter future. You should all be very proud of your accomplishments. I want to encourage you to connect with fellow finalists, stay in touch with one another and create a community of future science and technology leaders.

To accelerate your science communication, research and innovation endeavours, we have created a web app, the Sciencebuskers. The Sciencebuskers platform makes it incredibly easy to inspire scientific curiosity through the power of science communication. Capture and publish your exciting science demonstration or innovation, or any photos that communicate or explain STEM concepts or phenomena. By using the Sciencebuskers platform, you will also be able to collect feedback from other users, feedback that you can use as testimonial for your acheivements.

To the parents, teachers and mentors who devote so much of their resources, personal time and efforts in supporting the young scientists and innovators to participate, I welcome you and sincerely thank you for your passion, dedication, and commitment to developing and inspiring the next generation of leaders in science and technology.

I encourage you to take advantage of everything the 2021 Virtual Africa Science Buskers Festival has to offer, including connecting with mentors and exploring educational opportunities presented. I would like to thank the Broadcom Foundation for their sponsorship, the many additional organisations that have provided support and awards, all the speakers, and our team of Champions and Student Ambassadors and the judges who make this event possible.

Have a wonderful time and best wishes!

Knowledge Chikundi
Founder, Africa Science Buskers Festival

WELCOME MESSAGES

Paula Golden
President,
Broadcom Foundation

Maria Wronski
Chief Financial Officer/Fair Liaison,
Broadcom Foundation

To the Teachers, Mentors, Parents and Students of the Africa Science Buskers Festival, Mhoroi!

It is a privilege for all of us at Broadcom Foundation to welcome you to the festival!
This year has challenged everyone – young and old alike – to find a way to follow their dreams while being pulled along by swift river currents of the global pandemic. Some of you may have experienced sickness and loss, making it very difficult to go on with your life with hope for the future.

The fact that you are participating in the fair is a testament to your perseverance and determination to stay the course, work on the projects you are creating to become future scientists, engineers and innovators. You are all winners this year, and your participation deserves special congratulations.

This year, the Broadcom Foundation is offering a commendation called Broadcom Coding with Commitment to a student who 1) combines STEM Knowledge with Computation/Coding in the research, design, or development of a project that 2) Expresses his/her Passion for helping or improving one's community. The Foundation will provide the judges with guidelines designed to ensure that every middle school participant, no matter what level of education or access to technology, has a chance to win this special commendation.

Broadcom Foundation is extremely proud of our partnership with Africa Science Buskers Festival and, along with our well-wishes, sends congratulations to the organizing committee and STEM partners who make this event possible.

Nhanho yakanaka pamutambo!

Paula Golden
President
Broadcom Foundation

Maria Wronski
Chief Financial Officer/Fair Liaison
Broadcom Foundation

About the Africa Science Buskers Festival

Mission

The Africa Science Buskers Festival is a showcase of youth scientific achievement and innovation, which aims to promote science and technology communication and appreciation, provide a platform for children to develop their creativity and scientific mindsets, and facilitate the exchange of scientific ideas, interests and abilities among young scientists. It is a science communication celebration.

The Africa Science Buskers Festival encompasses the idea of developing African students' science communication skills through expressions of science in creative manners. This event serves as an excellent platform to spread key messages relating to the importance of inspiring an interest in science.

The Story

In March 2016, the Science Circus Africa was launched in Harare, Zimbabwe through the support of the Australian Embassy and the Australian National University (ANU). Dr Graham Walker from ANU trained the Zimbabwe Science Fair team in science show performance using every day, low-cost materials. This left the Science Fair team with new skillsets and inspiration. The Australian Embassy through the DAP supported the Zimbabwe Science Fair team with grants to run science circuses in Manicaland Province, Mashonaland Central Province and Bulawayo Province in 2016. The science circuses saw over fifty thousand primary and high school students in these provinces being engaged and inspired in science.

The overwhelming positive response from the learners, teachers and school authorities, was clear evidence that the science circuses kindled innate passions and love for science in the learners. The most fulfilling feedback was when the learners started writing letters to the Science Fair team expressing how the science shows had inspired them to pursue science, and that they too wanted to communicate science. It was this feedback that led to the establishment of the Africa Science Buskers Festival. A platform for inspired young people to practice and showcase their science communication passions and talents.

The Africa Science Buskers Festival was launched at the Australian Embassy, Harare in March 2017 with entries from Zambia, South Africa and Zimbabwe. The second edition of the Festival was held in Lusaka, Zambia in March 2018 with entries from Zimbabwe, South Africa and Zambia. The 3rd edition was held in Harare, Zimbabwe in July 2019 with entries from Zimbabwe, South Africa, Zambia, Botswana and Nigeria.

The 2021 Africa Science Buskers Festival is the second edition in the five-year history of the Festival to be held virtually after a successful 2020 virtual edition. Finalists of the 2021 edition come from the following countries: Zimbabwe, Zambia, South Africa, Tunisia, Malawi, Tanzania, Nigeria, Botswana, Nepal, Turkey, Spain, Indonesia, Mexico, Brazil and USA.

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EVENT SCHEDULE

Opening Ceremony - 28 July: 4:00pm - 5:00pm CAT

Hosted by: **Sandile Mtetwa**, *Co-Founder & Chair (Africans in STEM), Gates Scholar and PhD Candidate* at University of Cambridge, UK.
• Welcome Remarks by **Knowledge Chikundi**, *Founder*, Africa Science Buskers Festival
• Country Shout-Outs
• Keynote Address by **David Garrett, PhD**, *Vice President of Hardware*, Syntiant Corp
• Interview, **Ruvarashe Moyo** and **Nokutenda Saurombe**, *ASBF Finalists 2020 & 2021* by **Sandile Mtetwa.**

Workshops & Symposia - 29 July: 10:00am - 7:00pm CAT

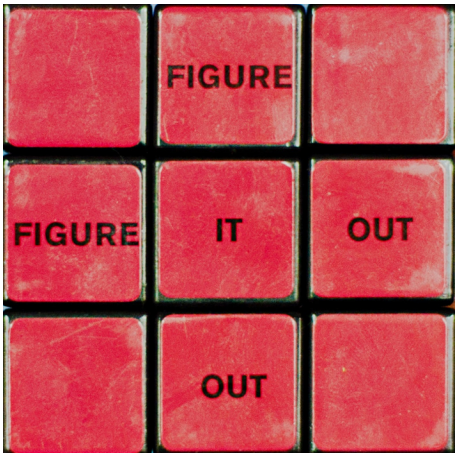
- **Python & Research (PyaR) Tutorial Course**, *University of California Santa Cruz (UCSC) Group* led by ***Professor Raja Guha Thakurta***, Chair & Professor of Astronomy and Astrophysics, University of California Santa Cruz, USA.
- **EducationUSA** by ***Tafadzwa Muzhandu***, EducationUSA Country Coordinator at the U.S Embassy, Harare.
- **Blockchain for Agriculture, Genevieve Leveille**, Principal Founder and CEO of AgriLedger.
- **Fevers in the Tropics, *Dr. Kenji Obadiah***, Standford Medicine, USA.
- **Finding success in a Non-Linear path in STEM, *Dr. Sharon Attipoe-Dorcoo*,** Consultant and Co-Principal of TERSHA LLC

Awards & Closing Ceremony - 31 July: 4:00pm - 5:30pm CAT

- Highlights video
- Keynote Address by **Tatenda Shopera, PhD**, *Principal Scientist*, Pfizer
- Awards Announcement

Science Buskers Conundrums

A New Program



Become a problem solver! The Science Buskers Conundrums program presents compelling experiences for students that are enthralled by complexity and problem solving. Our counter-intuitive conundrums present a perfect state of challenge that brings out the best in young people in terms of judgement, sense-making, critical thinking and problem solving. Each conundrum is likely to stimulate lively discussion at home. Participants feel high-level concepts in a challenging yet recreational and fun manner. There are problem solving points awarded after each conundrum.

Become a problem solver and be rewarded!

To participate in the Science Buskers Conundrums program:
1. Sign up on the Sciencebuskers platform (app.sciencebuskers.org)
2. On the top right corner of your Sciencebuskers homepage, click on the profile picture icon.
3. After clicking the profile picture icon, choose Conundrums and join the waitlist.

The Program goes live on 28 July at 5:00pm Central African Time

Visit the link to join the waitlist app.sciencebuskers.org/conundrum

SPEAKER BIOS

Opening Ceremony Speakers - 28 July

Host: Sandile Mtetwa

Sandile is a PhD student and Gates Scholar at the University of Cambridge in the Department of Chemistry. She is under the materials research interest group where she works on new semiconductive metal organic frameworks for hydrogen evolution. Her interest is in renewable energy which she intends to pursue as her career post receiving her doctorate. Sandile is also involved in and sometimes leads various projects that are focused on STEM enterprise in the UK and Africa from renewable energy, agriculture and water treatment. She is also the Chair for Africans in STEM, a network that connects and provides a platform for Black STEM students in the UK and around the world to showcase their work and be supported through their academic journeys.

Keynote Speaker: David Garrett

Dave Garrett, Ph.D. is vice president of hardware at Syntiant Corp. He is a technical expert in semiconductor design, focusing on Machine learning architectures and digital signal processing. Prior to Syntiant, he held the role of associate technical director at the Broadcom office of the CTO and is recognized as a Distinguished Engineer within the company. He was responsible for the transmit beamforming (TxBF) architectures in both the client and router side of Broadcom's 802.11ac/ax chipsets, shipping in more than a billion devices. He is an IEEE Fellow, and holds more than 100 granted US patents.
Dave is also the co-founder of 22nd Solutions which recently released HEYKUBE, a smart connected cube, which can teach anyone from a 5-year-old to a 95-year-old old to solve the cube. By integrating the computing, lights on the faces, and releasing an open-source Python library for Raspberry Pi, HEYKUBE provides an all-in-one STEM platform.
Previously, Dr. Garrett was at Bell Labs Wireless Research Division and later served as Director of Engineering, R&D Systems, at Beceem Communications, which was later acquired by Broadcom. Dr. Garrett received his Ph.D. from the University of Virginia, Charlottesville.

Panelist: Ruvarashe Moyo

Ruvarashe Moyo is a student at Queen Elizabeth High School. She is a young researcher and innovator, working to bring sustainable development in her community. She is the Co-Founder of Junior Space Explorers, an organisation that aims to inspire and fulfill curiosity in children of all ages through space exploration. She is a 2021 intern with the University of California Santa Cruz, USA in a program called Science Internship Program (SIP). She is a Kukaya Youth Development Initiative (KYDI) fellow and was a Science Communication Editor at Youth STEM Matters for a year. In 2021 Ruvarashe was a Genius Olympiad finalist and Bronze medalist. She is an awardee at Zimbabwe Science Fair and Africa Science Buskers Festival. In 2020 she was Zimbabwe's Broadcom MASTERS International Delegate and also represented Zimbabwe in the China Teenage Maker Camp and won Best Teamwork Award.

Panelist: Nokutenda Saurombe

Nokutenda Saurombe is a student at Queen Elizabeth High School in Harare, Zimbabwe. Her talents have finally been recognized with the title "Science Buddie". She has a lifelong dream of making a difference in the world through space exploration.
Nokutenda Saurombe is the Co-founder of Junior Space Explorers, a non- profit company that aims to inspire and fulfill curiosity in young people through space exploration. She is a 2021 intern with the Science Internship Program (SIP) that is hosted by the University of California Santa Cruz, USA. She is a 2020 and 2021 Africa Science Buskers Finalist. In 2020 she represented Zimbabwe in the China Teenage Maker Camp and won Best Teamwork Award.

SPEAKER BIOS

Symposia Speakers - 29 July

Genevieve Leveille

Genevieve is the Principal Founder and CEO of AgriLedger. AgriLedger enables trust, transparency and traceability through blockchain across the agricultural supply chain. Genevieve led a collaboration with Haiti's Ministry of Commerce and Industry to deliver a Distributed Ledger Technology (DLT) pilot sponsored by the World Bank. The project went live in May 2020 allowing Haitian fruit farmers and consumers to reap the benefits of fairer prices and improved food security.
Genevieve was nominated by the Financial Times to the top 100 BAME in UK technology in 2019, was named a winner of the ComputerWeekly 2020 Women in Software and was one of the top 5 finalist for Quesnay's Female Founders in FinTech in 2019. She is vice-chair of TechUK's Distributed Ledger Technologies Working Group, which provides strategic direction for all UK activities related to DLT and is an inaugural member of the Advisory Group for the Estonian Government's eResidency initiative. Genevieve has spoken on emerging technologies at numerous conferences and engagements globally.

Tafadzwa Muzhandu

Tafadzwa Muzhandu (Fadzi) attended Mt. Holyoke College (MHC) in the United States. She graduated in 2005, with a major in Economics and a minor in International Relations. After MHC, Fadzi worked as a researcher in Boston, before travelling to Nepal where she volunteered at a local primary school and participated in youth programs. In 2008, she received an Msc. in Applied Development Studies from the University of Reading, in the United Kingdom. She's worked for Tariro Trust, where she was the national coordinator advancing girls' education and World Education Inc. designing and coordinating education programs for vulnerable children. Currently, she is the EducationUSA country coordinator at the U.S. Embassy where she helps students apply to U.S. universities and colleges.

Dr. Kenji Obadiah

Dr. Kenji obtained his Ph.D. in Infectious Diseases from John A. Burns School of Medicine, USA, Master's in public health from Manchester Metropolitan University, UK, and BMLS from the University of Buea, Cameroon. In 2012 He was awarded the Global infectious disease fellowship by the National Institutes of Health (NIH), the USA for 4 years.

Dr. Kenji has worked extensively on profiling the infectious etiologies of febrile illnesses in Cameroon and developing Ebola Virus and Zika virus subunit vaccines. His current research focuses on developing and validating novel diagnostic tests. Dr. Kenji currently works at Stanford Medicine in the US, where he is in charge of the scientific, technical, and operational aspects of Infectious disease testing.

Dr. Sharon Attipoe-Dorcoo

Sharon Attipoe-Dorcoo, Ph.D., MPH, is a Ghanaian-American wife, mom, and author of a children's book.
Dr. Attipoe-Dorcoo is also an independent consultant and co-principal of TERSHA LLC, where she has overseen the executive management of the organization and in collaboration with the operations management, provided technical support to clients using analytics, critical research, and culturally responsive evaluation. She graduated from the University of Texas Health Science Center at the Houston School of Public Health where she worked in partnership with national mobile clinic programs, on community-based healthcare models to present evidence to inform policies in this area of care. Dr. Attipoe-Dorcoo has also presented at several conferences, led international research and evaluation projects, and co-facilitated virtual trainings.

Caleb Munemo

Caleb is a science enthusiast who is passionate about science and the S.T.EM agenda. Currently pursuing a bachelor's degree in Computer Science at Cavendish University Zambia.
Caleb is also President and Co Founder of science Exploration Zambia, A S.T.EM based organization founded on ethics and grounds of science advancements. Caleb is also a tutor in Chemistry and Physics, Project developer, Lead trainer and mentor in the S.T.E.M spaces.

SPEAKER BIOS

Closing Ceremony - 31 July

Dr. Tatenda Shopera

Dr. Shopera, a native of Zimbabwe, is a results-driven Ph.D Scientist and Chemical Engineer. He has vast experience working in the chemical and biopharmaceutical industry with specific emphasis on the development of manufacturing processes for high-value chemicals, medicines, and vaccines. Prior to joining Pfizer, Dr. Shopera was a bioprocess research and development scientist at MilliporeSigma, a global science and technology company. As a Principal Scientist at Pfizer, he develops cutting edge technologies and state-of-the-art manufacturing processes to meet global supply and tackle healthcare challenges across the globe ranging from rare diseases to pandemics. Most notably, his most recent ground-breaking work was being part of the Pfizer team that developed the COVID-19 mRNA vaccine, which is the first Covid-19 vaccine.

Dr. Shopera graduated with a Bachelor of Science degree in Biochemical Engineering from Jacobs University, Germany. He holds a Master of Science (MSc.) and Ph.D in Energy, Environmental, and Chemical Engineering degrees from Washington University in St. Louis. Outside of work, Dr. Shopera enjoys outdoor activities, raising awareness on diseases, and student engagement encouraging young people to pursue careers in STEM.

Follow Us

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The 2021 Virtual Africa Science Buskers Festival will be broadcast and streamed live on Facebook and YouTube. Please follow our YouTube and Facebook pages for updates. You can register on our website for reminders.

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www.sciencebuskers.org

Facebook
https://www.facebook.com/africasciencebuskersfestival

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