Africa Storytelling Challenge—Notable Submissions: In Neneh Sallah's Words

Committed to championing scientific innovations and advancements, Sallahi is affecting change in her community and throughout Africa—and this year's judges of the Africa Storytelling Challenge lauded these impressive efforts. Recognized as a runner-up in this year's contest, Sallah shares her essay submission below.

Early on as laboratory technician at the Medical Research Council unit in The Gambia, I recognised the high burden of preventable diseases and the benefits that prevention and control strategies had on reducing associated morbidity, mortality and alleviating the economic burden over time. My passion for improving health through medicine manifested and with the unit's capacity building efforts, I pursued training in Microbiology, enabling me to deepen my understanding of the biological mechanisms underlying infectious disease in preparation for tackling our multifactorial public health challenges. With innovation in technology, I was fascinated by the advancements and contributions being made in the medical field by the genomics revolution abroad. In The Gambia, we were generating vast amounts of interesting data via our research platforms and with very little to no expertise on the ground to handle or make sense of it. I recognised the need to fill the skills gap in qualified African bioinformatics scientists and pursued a Ph.D. in genomics with a focus on African populations at the Wellcome Sanger Institute in Cambridge. I taught myself to code, developed a pipeline to overcome the challenges of analysing large-scale genomic data, and identified genetic factors associated with immune response to infection In a Ugandan population cohort to aid the development of novel vaccines and therapeutics fundamental for disease prevention and management. With a strong interest in the genomic diversity of African populations and its public health implications, I continue my research at the London School of Hygiene and Tropical Medicine, where I coordinate and perform genomic analyses as part of a large multi-country collaborations across sub-Saharan Africa, south-east Asia and Europe, to identify and understand the genetic and environmental determinants of infectious diseases.

Owing to a long history of evolution and adaptation to varying environments, diet, demographic changes and exposure to disease, African populations have the highest level of human genetic variation and are more diverse compared to other populations. Therefore, the distribution of genetic risk factors and contribution within Africa and among other populations globally likely differ. Currently, while 1000s of genomic studies have been performed predominantly in populations of European ancestry, less than 3% of studies have been conducted in African populations, and thus, the contribution of human genetic

variation to disease in such diverse populations remains largely uncharacterized. We and others have provided clear evidence that the variability in response to infection between individuals and within populations is genetically determined. Following exposure to an infectious pathogen, human and pathogen genome along with environmental exposures are contributing factors to potential disease outcome which can range from asymptomatic carriage or mild symptoms, to progressive disease and death. Therefore, with a combination of genome sequencing technology, clinical information and bioinformatic approaches, we aim to address questions such as “whether genetic differences explain why some individuals are more susceptible to infection than others, and why some infections are mild while others due to the same pathogen are severe or fatal” particularly in the context of the environment. We are also addressing issues such as the management of febrile patients which is one of the most common and important problems facing healthcare providers globally. As the ability to differentiate between infections and provide diagnosis on clinical grounds is unreliable, many patients are treated with antibiotics for presumed bacterial infection when, in fact, they are suffering from self-resolving viral infection. Using genomics, we are identifying potential biomarkers to develop diagnostics for infection, provide therapeutic targets for drug and vaccine development (that might be population specific) to improve patient management and also alleviate issues such as antimicrobial resistance resulting from over-prescription.

The impact on patient care from genomic studies is substantial. While on the grounds of cost Africa is still long away from the benefits of personalised (individual based) medicine. Our research is laying the groundwork for the era of precision medicine, in which the current one size-fits-all approach to medical care will give way to more customized population-based strategies. As African research leaders are needed to ensure that advancements in science and access to quality healthcare becomes readily available and accepted in low-income countries, I am driven to share my knowledge and experiences to further influence the next generation of scientists. Young people, particularly in Africa need real examples to allow them to aspire, understand the benefits of research and support to pursue careers in STEM. Narratives are essential in the communication of science particularly as they have the ability to have a wider reach to engage non-expert audiences and encourage participation. As technology is contributing to the rapid evolution of scientific research it is crucial to use stories to demystify the purpose of research, how it is done, and the insights derived along with their social impact. Through my experience in working in both academic and clinical (low-resource) settings, sharing knowledge, having a good team, and the ability to embrace failure has been instrumental to my success. I have been inspired by many of the scientists and young people I crossed paths with, I have had great supervisors that mentored me and have been very influential in my scientific career. I have also had the opportunity to compete for and win funding that allowed me to pursue further education and develop myself as a globally competitive scientist. Through the peaks and troughs of research and tough peer review processes, I continue to persevere in the quest of improving the health and livelihoods of populations.

The content and views presented here are those of the individual Challenge participant.

About the Africa Storytelling Challenge

The inaugural Champions of Science—Africa Storytelling Challenge took place between May and August 2018. Open to all scientists doing innovative work in Africa, the contest drew more than 100 submissions. An independent selection committee of scientists, policymakers and science journalists reviewed the applications and selected the winners. Each winner will be awarded $5,000 and will have the opportunity to share their stories at the 2019 American Association for the Advancement of Science (AAAS) annual meeting in Washington, D.C.