

The progress, challenges and future prospects of synthetic biology and biotechnology in Africa.

Otim Geoffrey,

ABSTRACT: Synthetic biology which is a part of Biotechnology is broadly classified as the deliberate design of novel biological systems and organisms that draws on principles elucidated by biologists, chemists, physicists and engineers, in essence it is about redesigning life. The main aim of this work was to review the state of synthetic biology in Africa in contrast with the trends of both traditional and modern biotechnologies and to give highlights on the future novelty of biotechnology and synthetic biology. The research showed that synthetic biology in Africa has not yet fully come of age, and that plant biotechnology has been extensively adopted in the continent. The potentials which can be achieved with this technology are unimaginable and can bring about great progress in developing nations. Moreover, larger political initiatives and government policies needs to be instigated if the advantages of this technology are to

be fully felt in Africa, this thus calls for further research and investments into the field of Biotechnology. Green biotechnology is biotechnology applied to agricultural processes. An example would be the selection and domestication of plants via micropropagation. Another example is the designing of transgenic plants to grow under specific environments in the presence (or absence) of chemicals. One hope is that green biotechnology might produce more environmentally friendly solutions than traditional industrial agriculture. An example of this is the engineering of a plant to express a pesticide, thereby ending the need of external application of pesticides. An example of this would be Bt corn. Whether or not green biotechnology products such as this are ultimately more environmentally friendly is a topic of considerable debate.

Biography

Otim Geoffrey, Founder & CEO SynBio Africa, Founder iGEM Makerere University Team. Medical Laboratory Technologist, Uganda Virus Research Institute The progress, challenges and future prospects of synthetic biology and biotechnology in Africa.

Recent Publications

1. Wokorach G, Otim G, Njuguna J, Edema H, Njung'e V, Machuka EM, Yao N, Stomeo F, Echodu R. *Physiol Mol Plant Pathol.* 2020 Apr;110:101473. doi: 10.1016/j.pmpp.2020.101473.PMID: 32454559
2. Echodu R, Edema H, Wokorach G, Zawedde C, Otim G, Luambano N, Ateka EM, Asiimwe T. *Physiol Mol Plant Pathol.* 2019 Jan;105:3-16. doi: 10.1016/j.pmpp.2018.07.004.PMID: 31007371
3. Filannino P (2018). Metabolic and functional paths of lactic acid bacteria in plant foods: get out of the labyrinth. *Current Opinion in Biotechnology*, 49, 64–72.

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SynBio Africa, Founder iGEM Makerere University Team. Medical Laboratory Technologist, Uganda Virus Research Institute



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