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Prospects of Bio Science Research in Deep Underground Laboratories in Africa: Botswana Perspective - (in-person)

Tuesday, 20 August 2024 10:00 (30 minutes)

20-minute talk + 10-minute questions

There is currently no Deep Underground Laboratory in Africa despite the research challenges Africa faces in Bio Science, some of these research challenges can be addressed partly through the existence and utilization of Deep Underground Laboratories. There is however one envisaged project to construct a Deep underground laboratory in South Africa, named Paarl Africa Underground Laboratory (PAUL), this project is already at construction stage and will be the first in Africa and the second in the southern hemisphere. Botswana like the rest of the world need a Deep Underground Laboratory. The country established, Botswana International University of Science and Technology (BIUST) as a science and technology dedicated University, with a vast campus of about 2000 hectares. The size of the campus provides ample space for the establishment of a Deep Underground Laboratory. Considering the extreme exposure of the terrestrial environment to the sun. Natural radiation is anticipated to be high due to clear skies with no cloud cover most of the year. It will be most ideal to conduct radiobiology experiments in deep underground laboratories to study both in vitro and in vivo biological systems. These in vitro and in vivo experiments can help build new insights in research activities around diseases over burdening the Botswana economy e.g HIV/AIDS, cancer, diabetes mellites and antibiotic resistance. Establishment of these laboratories at BIUST or collaborations with existing facilities elsewhere will help scientist at BIUST study possible influences of natural radiation on disease progression and/or disease treatment. Humanised mice model for HIV/AIDS, cancer and diabetes mellites can be observed both under natural radiation and in Deep underground laboratories to study disease progression at molecular level. Influences of natural radiation on antibiotic resistance can also be elucidated during exposure of treatment models to natural radiation or when excluded in Deep Underground laboratory. These findings can inform on the ameliorative measures to be put in place by the country.

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