

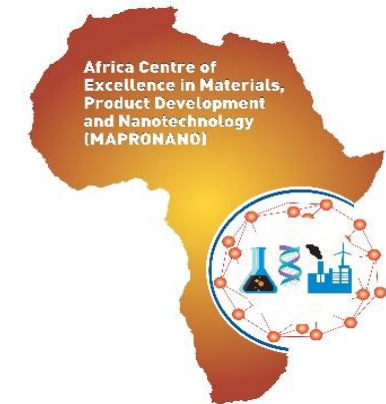
ACE II

Eastern and Southern Africa
Higher Education Centers of Excellence Project



Eastern and Southern Africa Higher Education Centers of Excellence Project (ACE II)

Materials, Product Development and Nano-Technology, MAPRONANO ACE, CEDAT-Mak



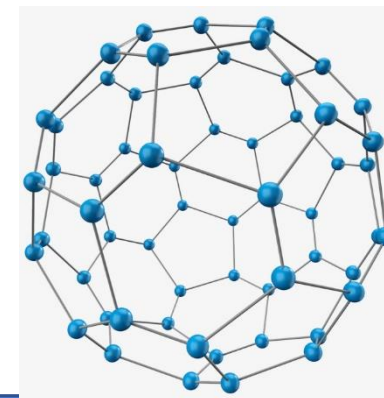
Prof. John Baptist Kirabira, Center Leader/PI

Presentation to HEPSSA Workshop, July 15-16, 2021



Thematic Areas

1. Materials Science & Product Development/Innovations
2. Nanotechnology innovations
3. Nanomedicine



COVID Innovations



Development and Evaluation of Nanobody-based Point of Care Diagnostic Kit for Detection Of Covid -19 in Saliva

Research Team: ¹ Dr. Steven Odongo [Co - PI]; ² Prof. Charles Ibingira [Principal Investigator], ³ Prof. Julius Lutwaama, [Co-PI]; ¹ Dr. Eddie Wampande [Co-PI]; ² Brian Mujuni [Co-PI]; ² Moses Okee [Co-PI], ³ Dennison Kizito, Hedmond Okello ²

Funding Agency: **PRESIDE**

Collaborators:

1. Prof. Yann, University of Antwerp and Prof. Stefen Magez, Virje University (Belgium)
2. Gene Script, USA.

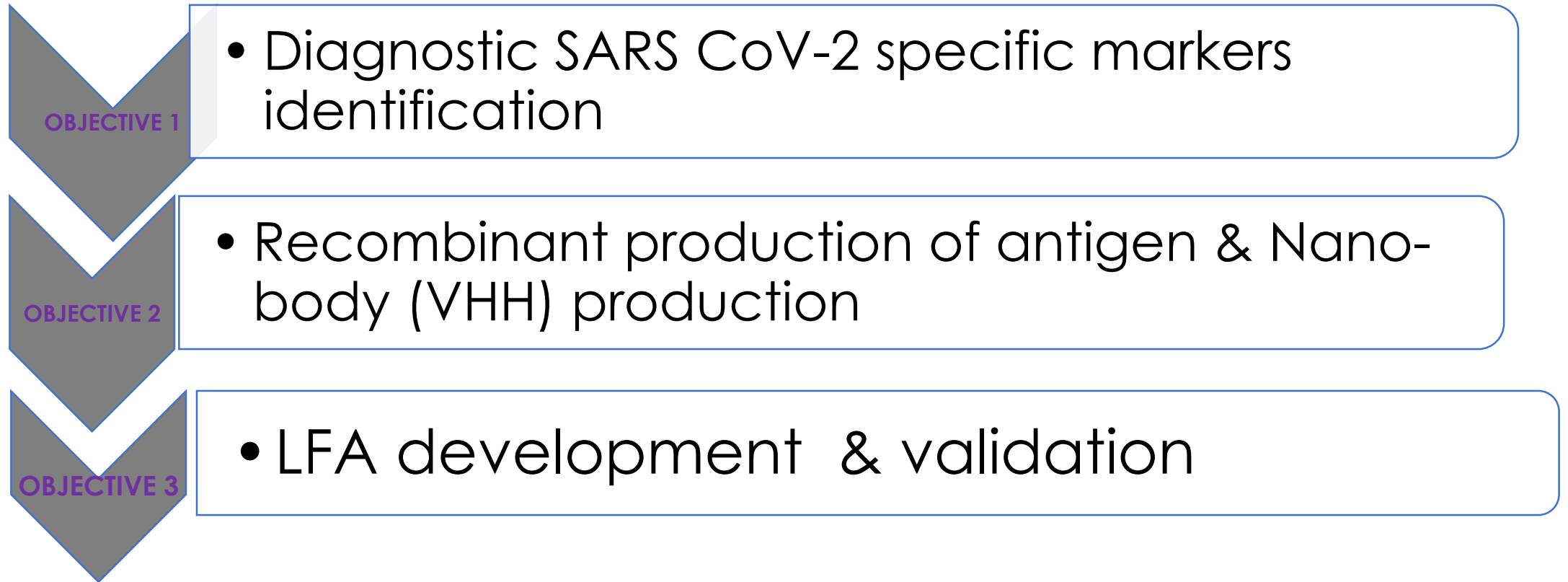
Development of COVID-19 diagnostic rapid test kit for detection of the virus in saliva

We have started development of COVID-19 diagnostic rapid test kit for detection of the virus in saliva



Aim:

Generation and characterisation of single domain camelid nanobodies to coronavirus for development of a point of care diagnostic test kit for detection of SARS Cov-2 (COVID-19) in saliva





Evaluation of nanoscale materials as candidate adjuvants and delivery systems for SARS CoV-2 sub unit vaccine in Humanized mice (Phase II)



Research Team: Prof. John Baptist Kirabira [PI], Dr. Eddie Wampande (Co-PI), Prof. Charles Ibingira [Co-PI]; Dr. Charles Kato, Kenneth Ssekatawa, Prof. Julius Lutwaama, Brian Mujuni, Byamugisha Sabiiti

Funding Agency: **PRESIDE**

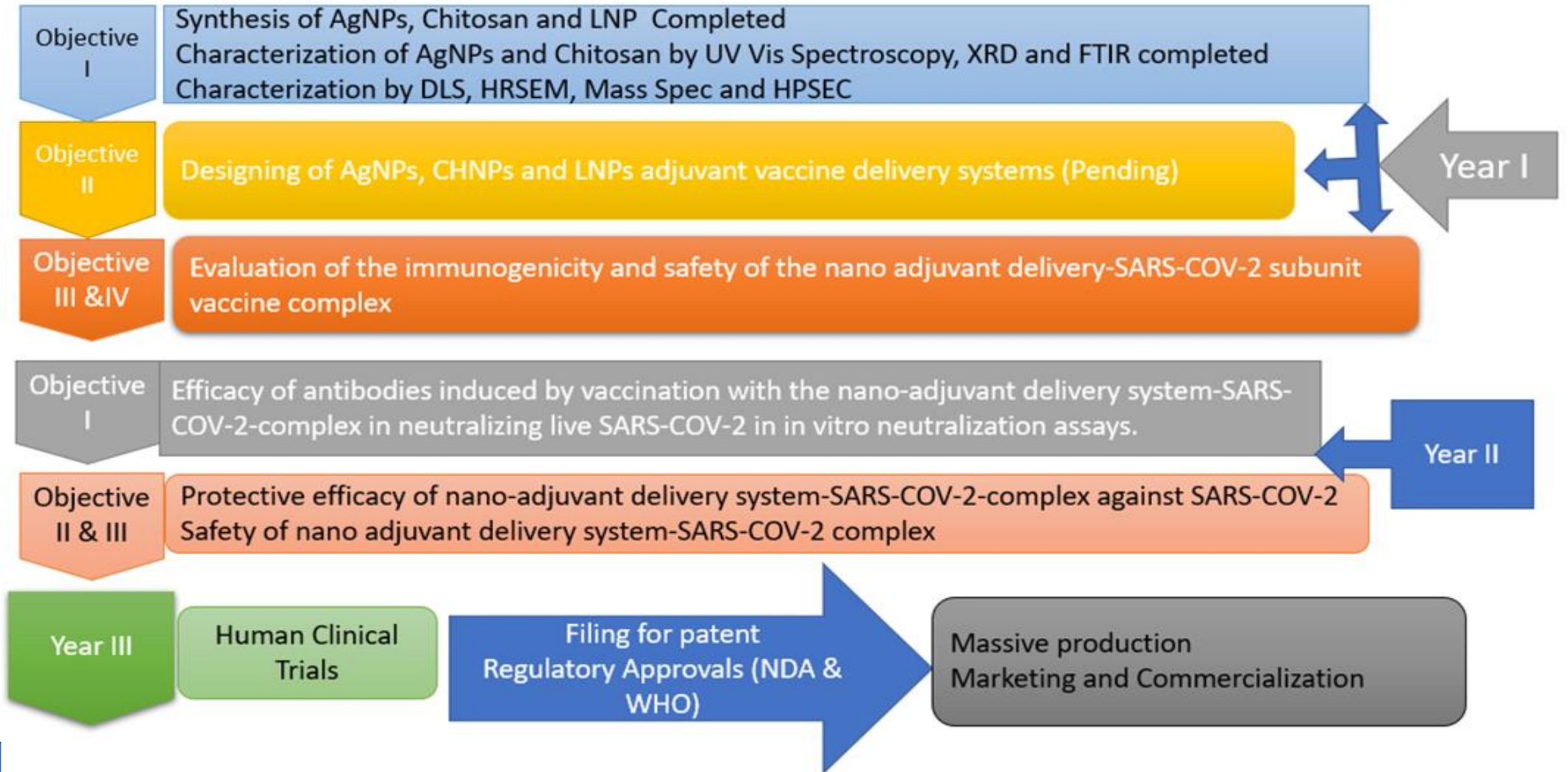
Lead Institutions:

1. Makerere University (CEDAT/MAPRONANO ACE, CHS, & COVAB)
2. Uganda Virus Research Institute (UVRI).

Collaborators:

1. University of Nairobi, Kenya
2. University of Kwazul Natal, South Africa

Product Development Chain





Green Synthesis and Functionalisation of Paramagnetic Nanoparticles for Viral RNA extraction



Research Team: Prof. John Baptist Kirabira [PI], Dr. Cissy Kityo, JCRC (Co-PI), Prof. Charles Ibingira [Co-PI]; Kenneth Ssekatawa, Brian Mujuni

Funding Agency: **MAPRONANO ACE**

Lead Institutions:

1. Makerere University (CEDAT/MAPRONANO ACE)
2. Joint Clinical Research Centre (JCRC).

Collaborators:

1. University of Kwazul Natal, South Africa

Aim

Determine the technical Viability of synthesizing Paramagnetic NPs (PMNPs) in Uganda

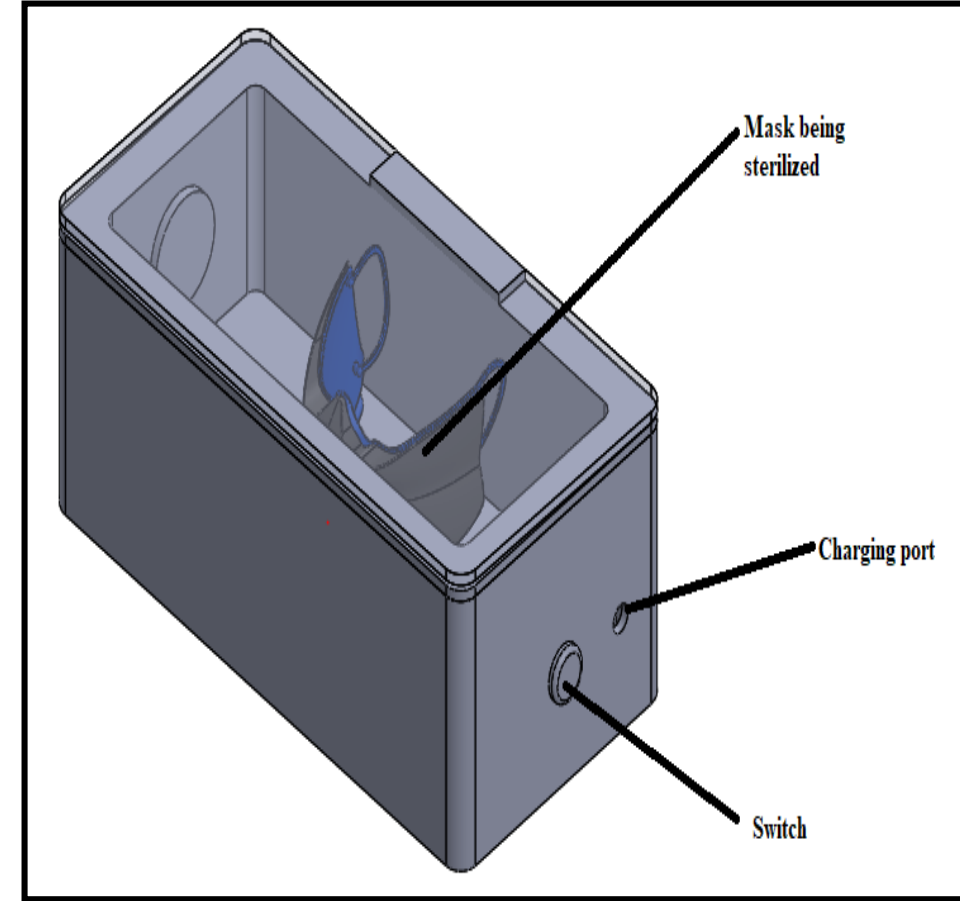
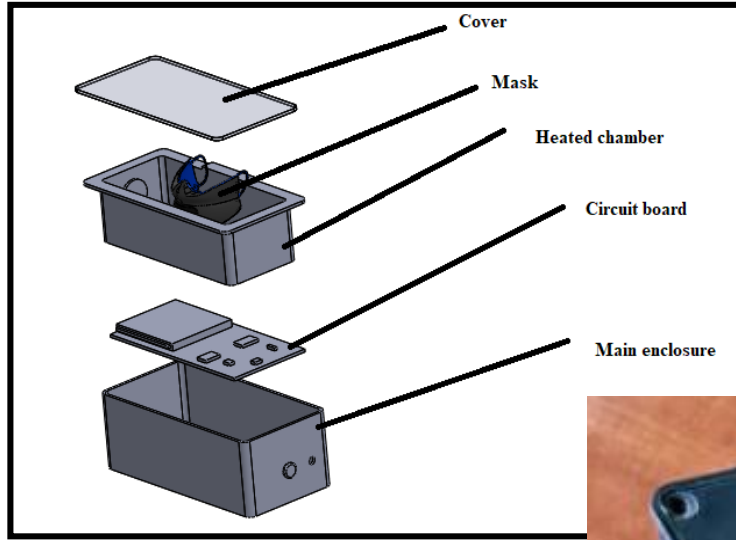
Specific Objectives:

- 1) Determine the requirements/specifications of PMNPs
- 2) To green synthesize and functionalize PMNPs
- 3) To determine the viral RNA extraction efficiency of the green synthesized PMNPs
- 4) To evaluate the efficiency of DNA isolation from different samples using green synthesized PMNPs
- 5) Evaluate the synthesized PMNPs in PCR Based Diagnostic Kit for Covid-19 (RARA)

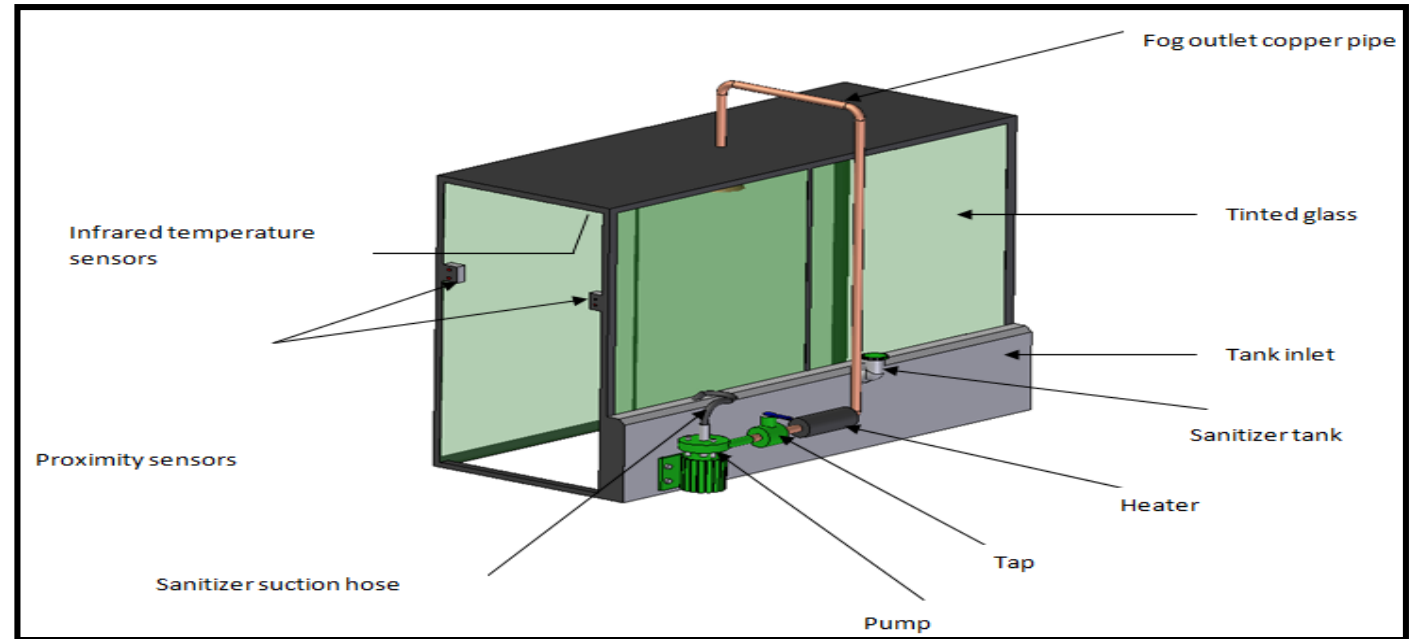
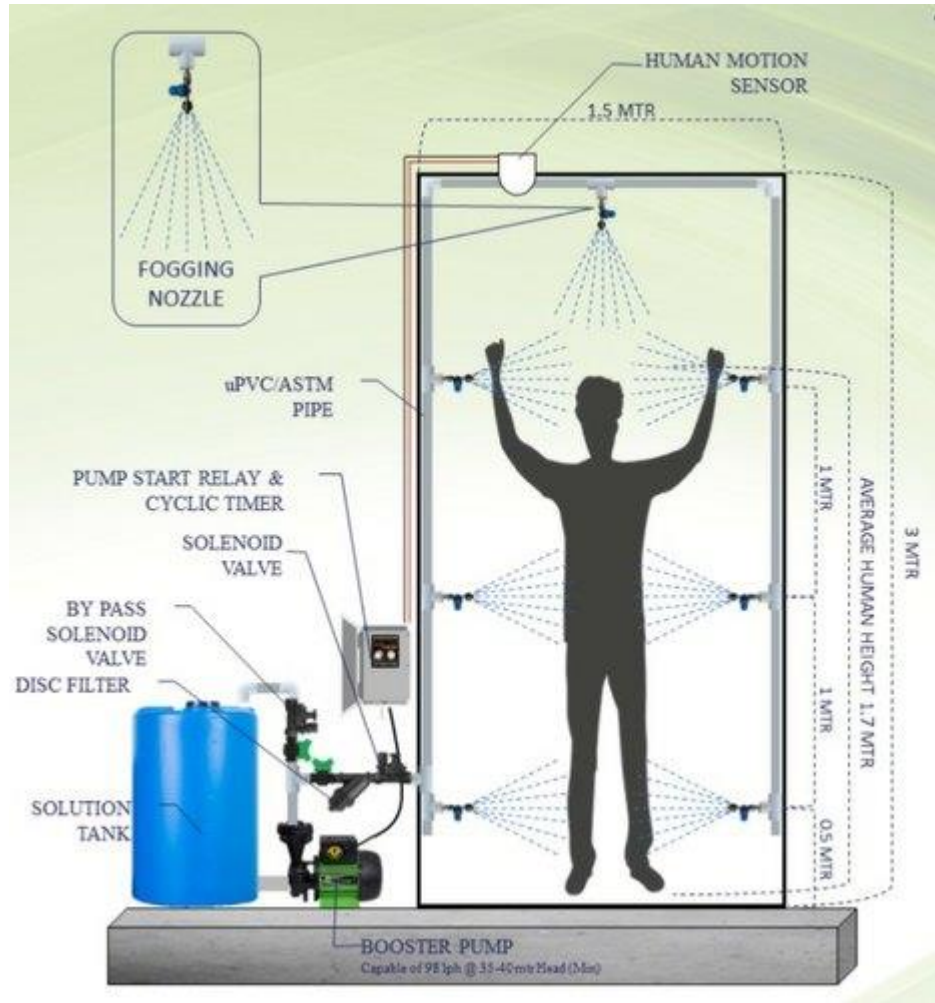
MAPRONANO ACE in partnership MakCHS developed an affordable hand sanitizer as a prevention measure for COVID 19



Portable Mask Sterilizing Pod, RIF

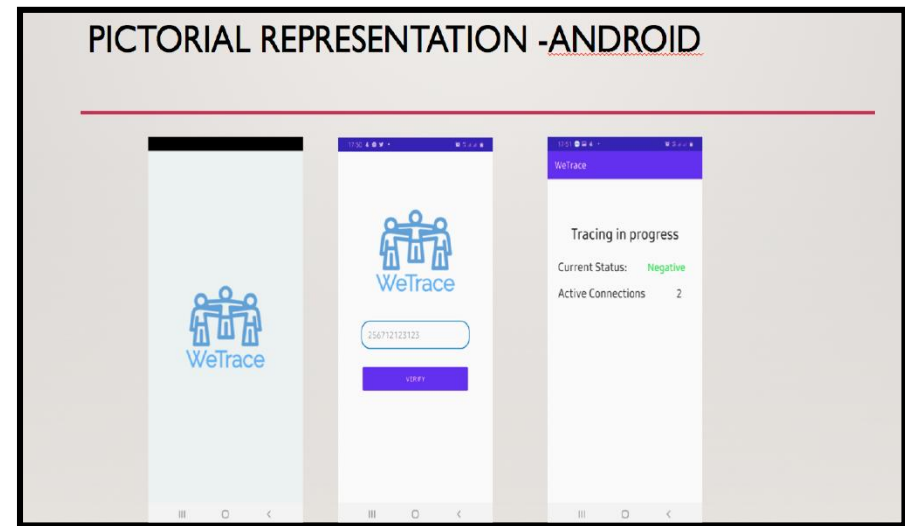


Solar Powered Sanitizer Booth



Development of Contact Tracing for Covid-19 Surveillance

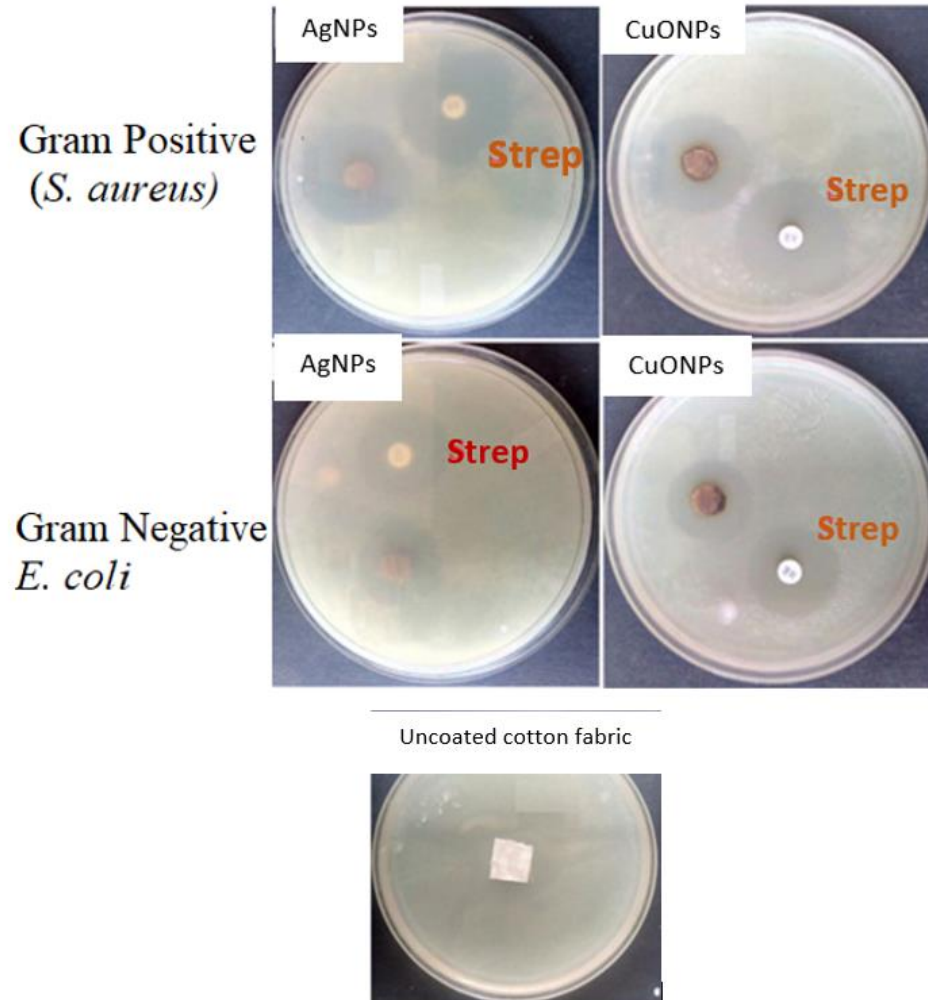
MAPRONANO ACE, in partnership with Nanobits has developed a contact-tracing App for surveillance and real-time detection of Covid-19 positive cases named “WeTrace”.



Re Usable Self sanitizing Mask



Bioactive nanocoated masks with antimicrobial activity



Field Emission Scanning Electron Microscope (FE-SEM) – Procured under PRESIDE/MoSTI



MAPRONANO Partners



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 US ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES
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UGANDA INDUSTRIAL RESEARCH INSTITUTE

"A Lead Agency in Industrialisation of Uganda"



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