



Integrated Biorepository of H3Africa in Uganda

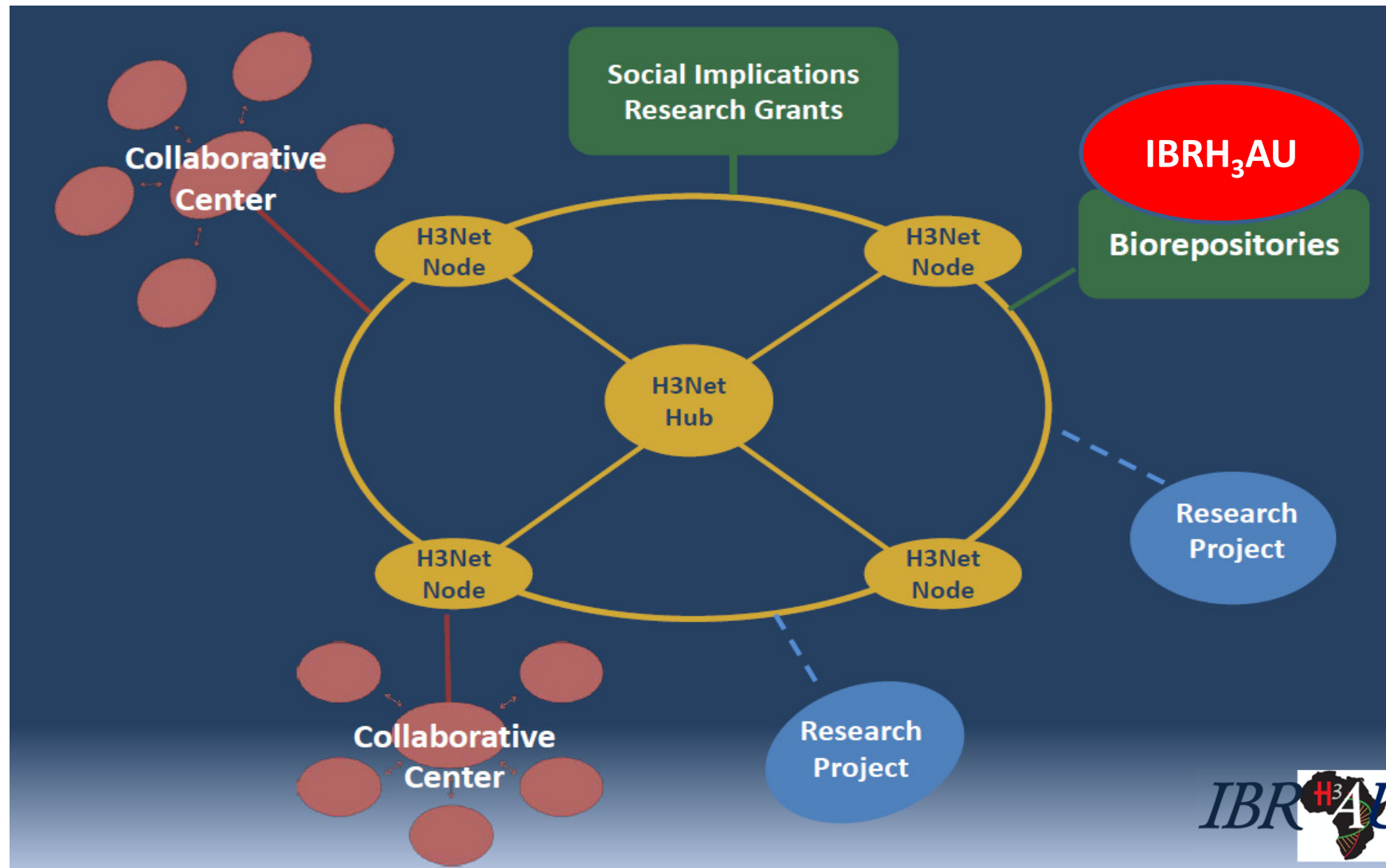
Moses L. Joloba



Background & Rationale

- Africa faces a triple burden of infectious, NCD and malnutrition
- Genomic and environmental determinants of disease among African populations are poorly understood
- Human hereditary and health (H3) Africa initiative's white paper underlined need to build local African capacity for genomic research

H3Africa Consortium and IBRH₃AU



Overall goal

To develop a state- of-the-art world class biorepository

- Well annotated quality assured biospecimens (ISBER)
- Available to African & International researchers
- Enhance genomic discovery projects as it relates to Africa



Specific aims

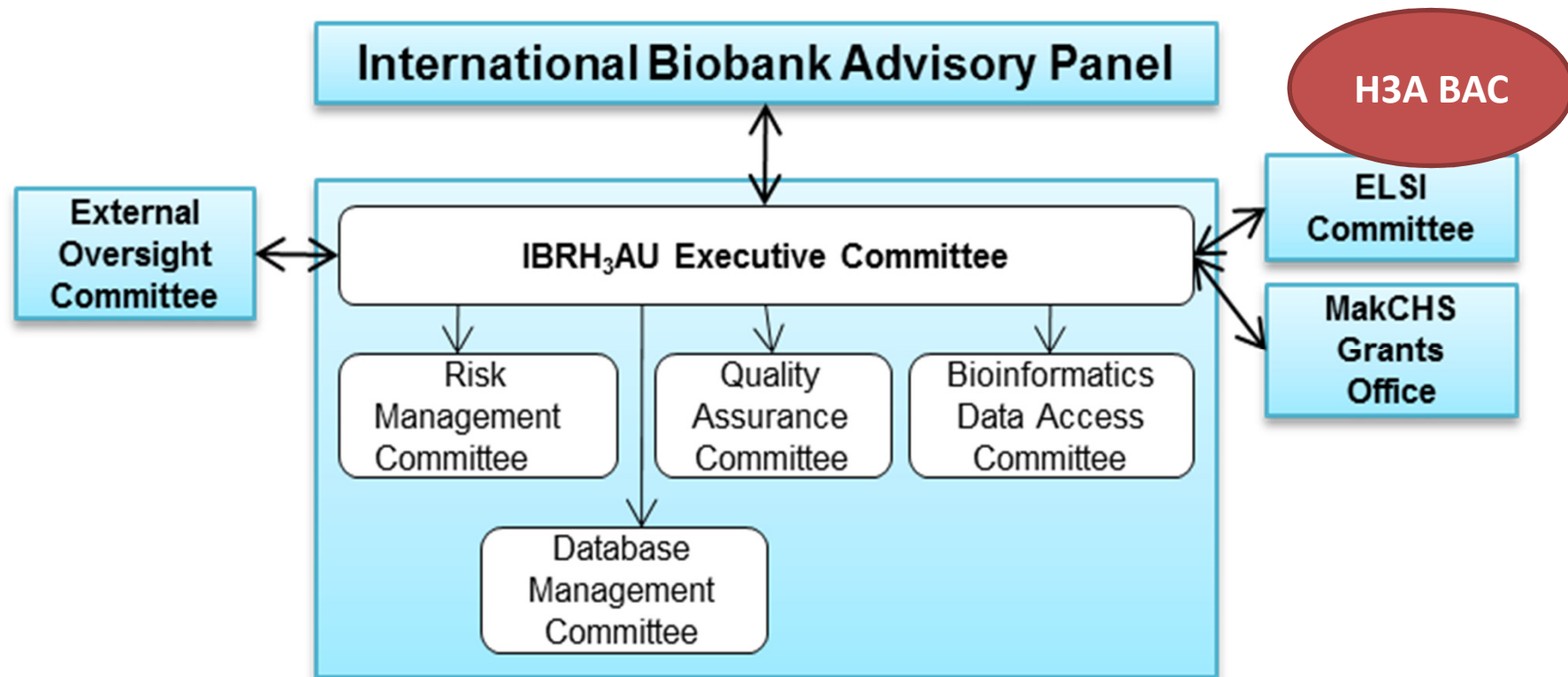
Phase I

- Build organizational structure
- Train human resource
- Improve existing infrastructure
- Develop protocols
- Pilot-test above frame-work

Phase II

- Improve existing infrastructure
- Expand human capacity through further training
- Scale up to handle 400,000 samples by end

Governance Structure



Innovations

- Cryopreservation
- Lyophilization
- Live cell preparation (cell line creation)
- Biorepositing for genomic studies in Africa

Strengths

- Institutional support and commitment
 - University, MoH, UNCST
- Existing Care, Training and Research facilities
 - Mulago NRTN, UCI, IDI, Baylor, Waltereod, MUJHU, CASE Western, JCRC, Wellcome Trust, MEPI, THRiVE
- Collaborators
 - KEMRI, NMRI, UVRI, TrypanoGEN, CAfGEN
- Existing infrastructure
 - Immunology, Microbiology, Molecular biology, Mycobacteriology, Pathology, Cancer Registry, Uganda Cancer Institute
- Integration of existing resources
 - Isolated repositories
 - Human resource
 - Institutions

} Integrated through one governance structure



Existing Repository function

- **Lab methods**
 - GCLP compliant
 - Equipment well maintained.
- **Current LIMS capacity**
 - Freezer-works and access
 - Senior data officer.
- **Storage capacity**
 - Freezer- 250,000 vials
 - LN2-8000 vials
 - Ambient –
- **Power supply**
 - Dedicated line
 - 24/7, automatic, double generator back up
 - Co₂ Back up



Samples processed, in storage & shipped

(2004 – 2012)

| Sample Type | Processed | In storage | Shipped |
|---|----------------|----------------|----------------|
| Serum | 399,558 | 44,340 | 139,238 |
| Plasma | 379,510 | 49,702 | 317,718 |
| Swabs & tissues | 43,153 | 3,300 | 39,768 |
| PBMCs | 1,345 | 2,562 | 75 |
| Nucleic acids (DNA & RNA) | 7,397 | 1,445 | 7,292 |
| Others (Urine, semen, slides, blood spots) | 139,146 | 49,568 | 88,778 |
| Totals | 970,079 | 150,917 | 592,869 |

Quality Assurance

- **External Quality Assurance**

- Monitoring & External audits
- EQA by CAP.

- **Evidence of quality**

- Feed back reports
 - Shipment receipt
 - Analysis of out comes
- Customer surveys

- **Shipment**

- IATA certified staff

IATA Certificate
Record of Training

Paul Odongo

has completed training for the handling/offering for transport of Dangerous Goods as indicated below.

Tested as per ICAO TI/42/IATA 1.5

Date of Exam: 2010 Jul 16

Test Version: 2010.8.1

Trainer Address: Saf-T-Pak Inc, 17854 106A Ave, Edmonton AB T5S 1V3

Employer Address: Medical and Molecular labs Makerere University college of Health Sciences, Department of Medical Microbiology, Immunology and Parasitology, Box 7072, Kampala 256

Expiry date: 2012 Jul 16

Materials Covered for Div 6.2 & Class 9:
Regulations
Introduction to Shipping
Classification
Identification
Packing
Marking and Labeling
Documentation
Emergency Response and Security Awareness

Training Types:
☒ Category A
☒ Category B
☒ Exempt
☒ Limited, Excepted Quantities
☒ Genetically Modified Organisms
☒ Dry Ice
☒ Liquid Nitrogen Dry Shipper
☒ Liquid Nitrogen Wet Shipper

Exam Score 100%

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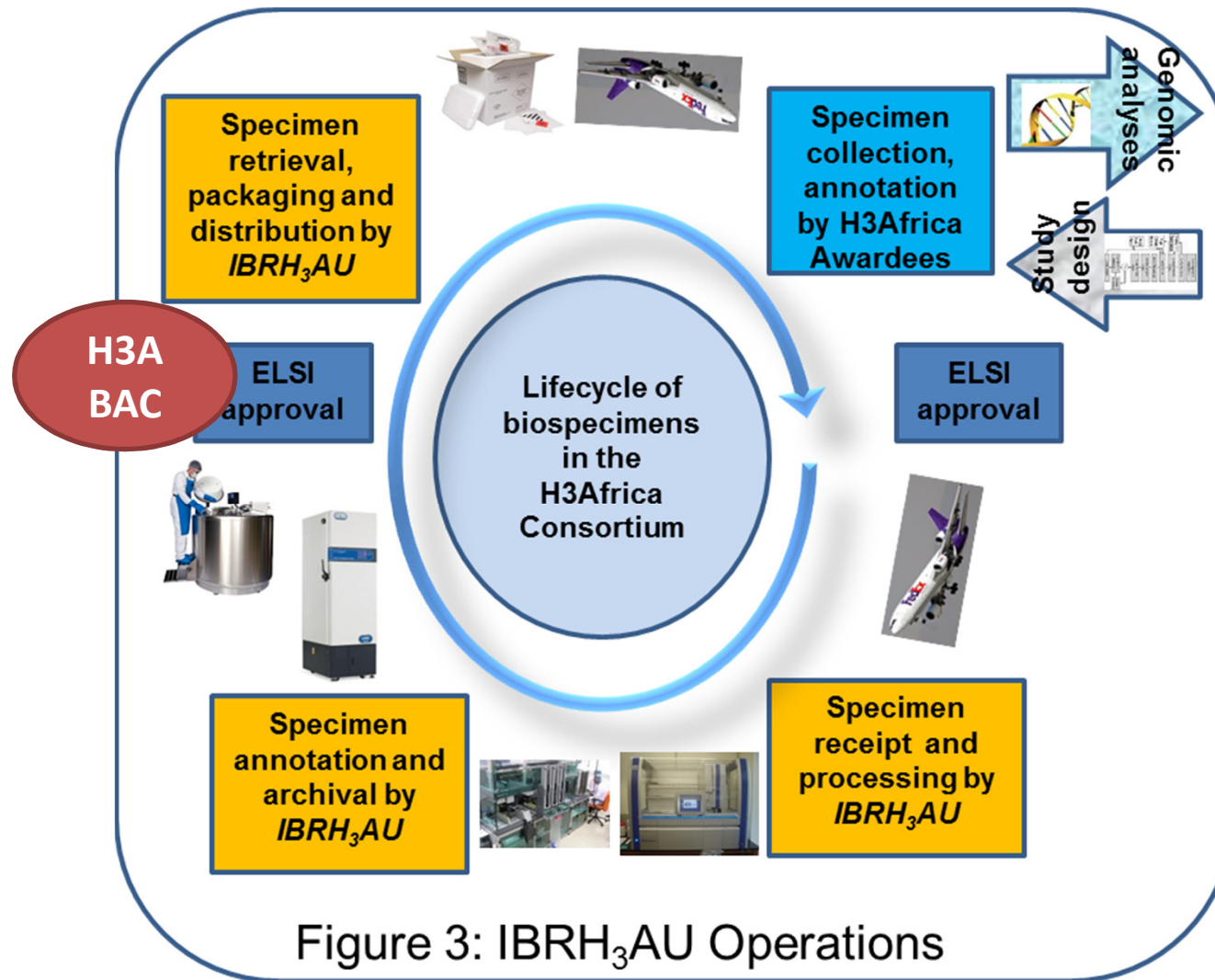


Operations to enhance success

- Receipt, Retention and Retrieval policies
- LIMS for Bioinformatics
- Quality Assurance program
- Consultants (R. Lawlor-ESBB, H Haugen-UW, F Betsou-ISBER)
- Comprehensive governance structure
- Training and review of operations



Summary of Operations



Impact

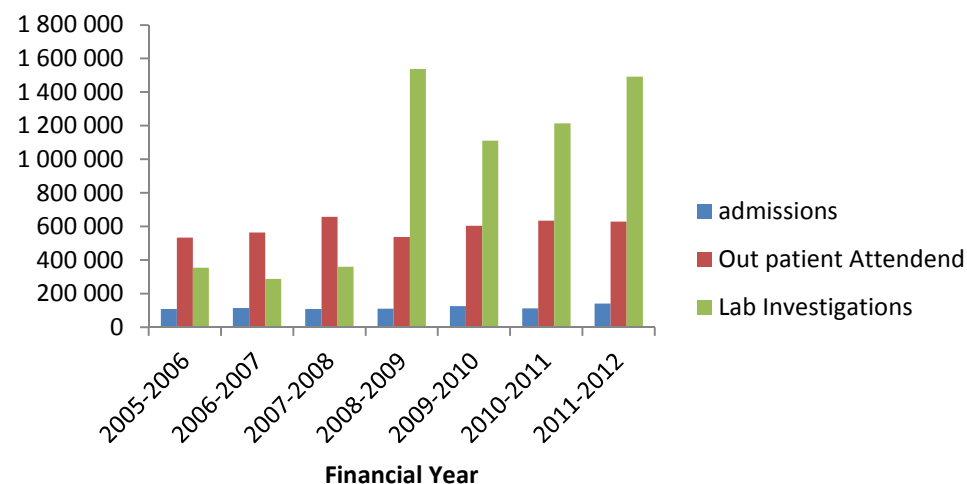
- Fruitful collaborations have been established across Africa
- African science is enabled to improve African health
- African scientists are empowered

Sustainability

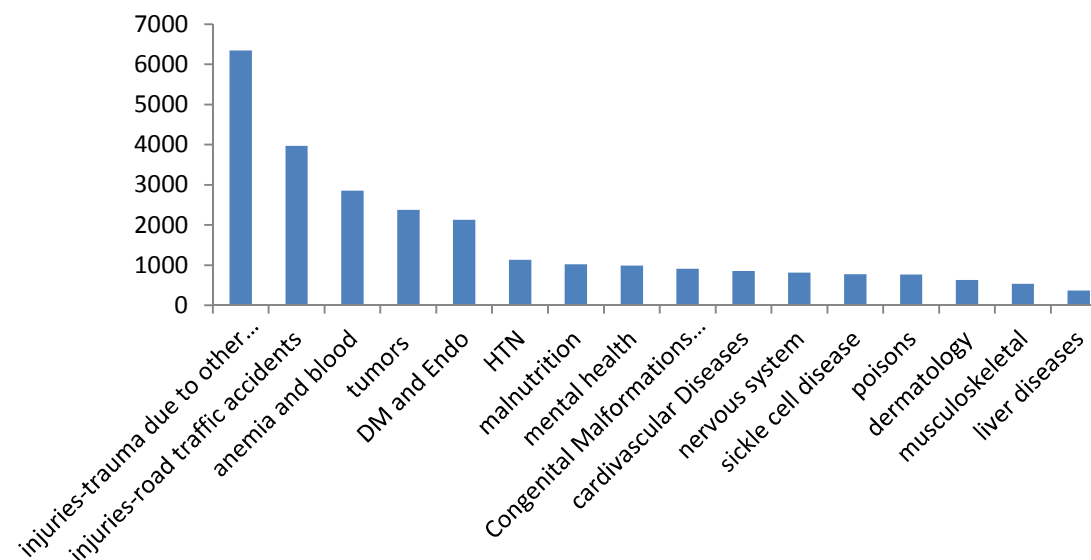
- University commitment
 - Access to space.
 - Staff retention
- Develop a business model
 - Fee for service
- Research and development model
 - Grant writing
 - Industry engagement to develop diagnostics, drugs , vaccines etc
 - Patents
- Operating within the African Biorepository network
 - Allows for specialization and reduces costs of administration
- Training HUB in Biorepository management and Science



Mulago Hospital Complex



Non Communicable Diseases/Admissions 2010



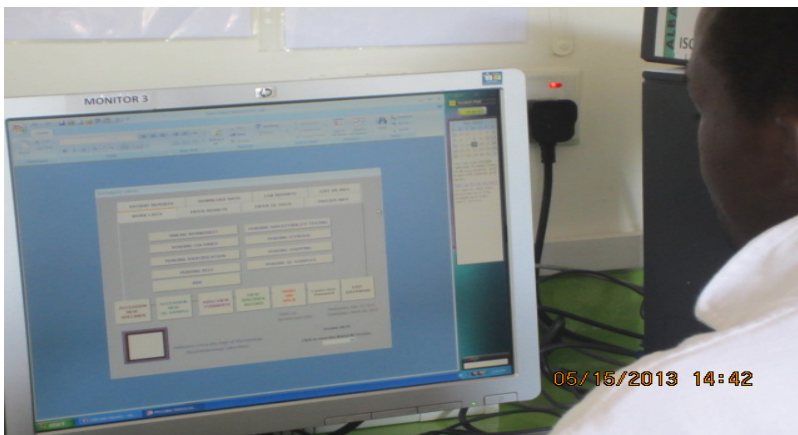
Biosafety Level 2 & 3



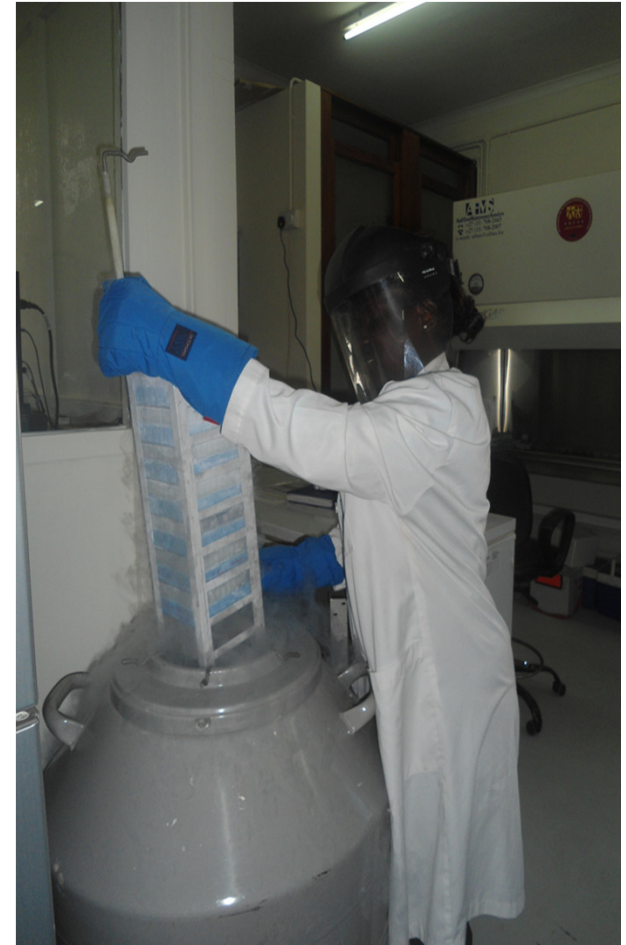
ACCESSIONED USING;
LAB INFO. MANAGEMENT SYSTEM



STORED AND RETRIVED USING;
SAMPLE MANAGEMENT SYSTEM



Biorepository Capacity



Biorepository Capacity

-80 C Freezers



Beeper system



Generators



LN2 plant



Generators



Thank you!!!

