

Introducing the Biosciences eastern and central Africa – International Livestock Research Institute (BecA-ILRI) Hub

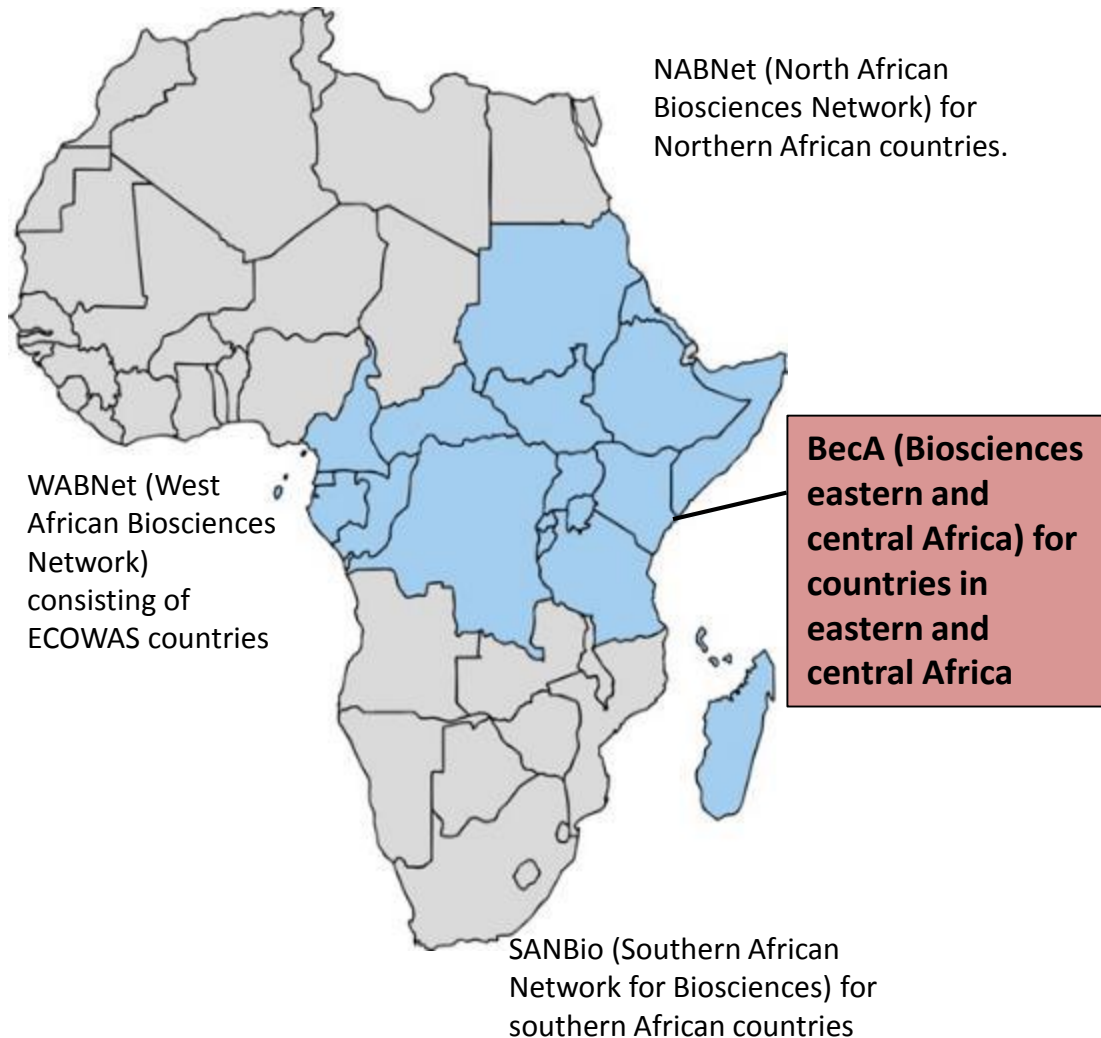


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ILRI Institute Planning Meeting
4-7 October 2016

biosciences
eastern and central africa



Background



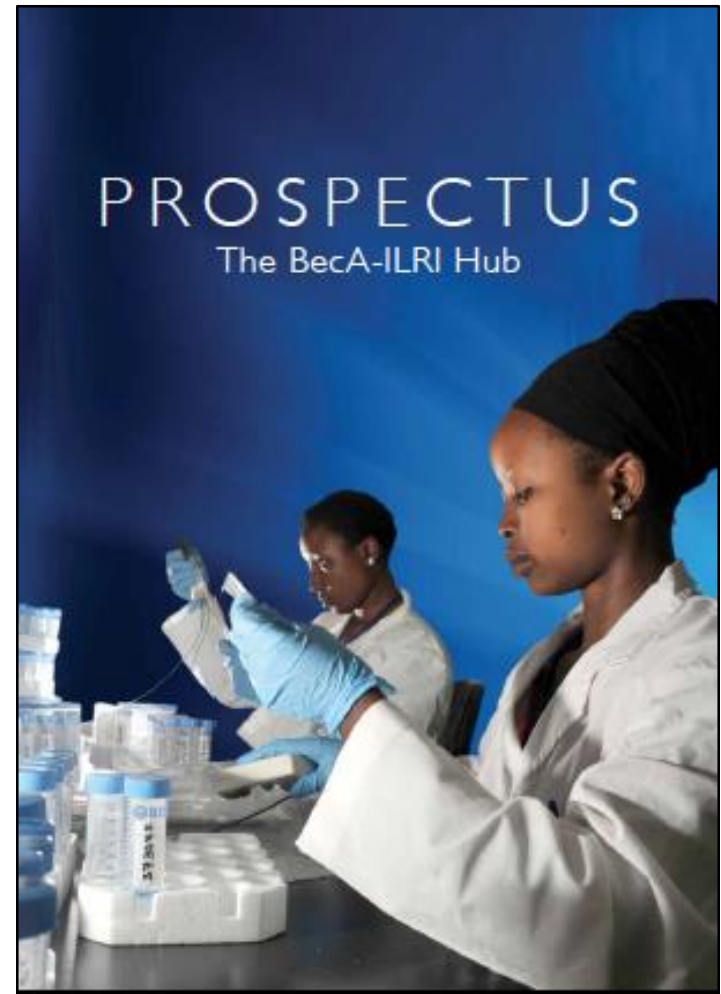
- **AU/NEPAD** - Africa Biosciences Initiative (ABI): Creation of four regional networks
- **ILRI** - Interest to support agricultural research in the region through facilitation of access to modern research infrastructure by scientists in Africa (2002)

What is the BecA-ILRI Hub?



- A shared research platform that is a “center for excellence” for bioscience in Africa
- Provide access to modern bioscience applications to scientists to address key agricultural challenges using the available technology platforms, research-related services and capacity building activities

**Approved by ILRI BoT
April, 2013**



Mid 2015

Program strategy and objectives

STRATEGY (In response to):

- ILRI livestock agenda
- CGIAR research programs (CRPs)
- AU/NEPAD African Biosciences Initiative (ABI) S&T strategy
- African NARS needs and priorities
- Africa's agriculture development plans and priorities at Continental and regional level (CAADP, S3A, ASARECA, CORAF)
- Development of strategic collaborations between African NARIs/universities and world leading research institutions and Universities

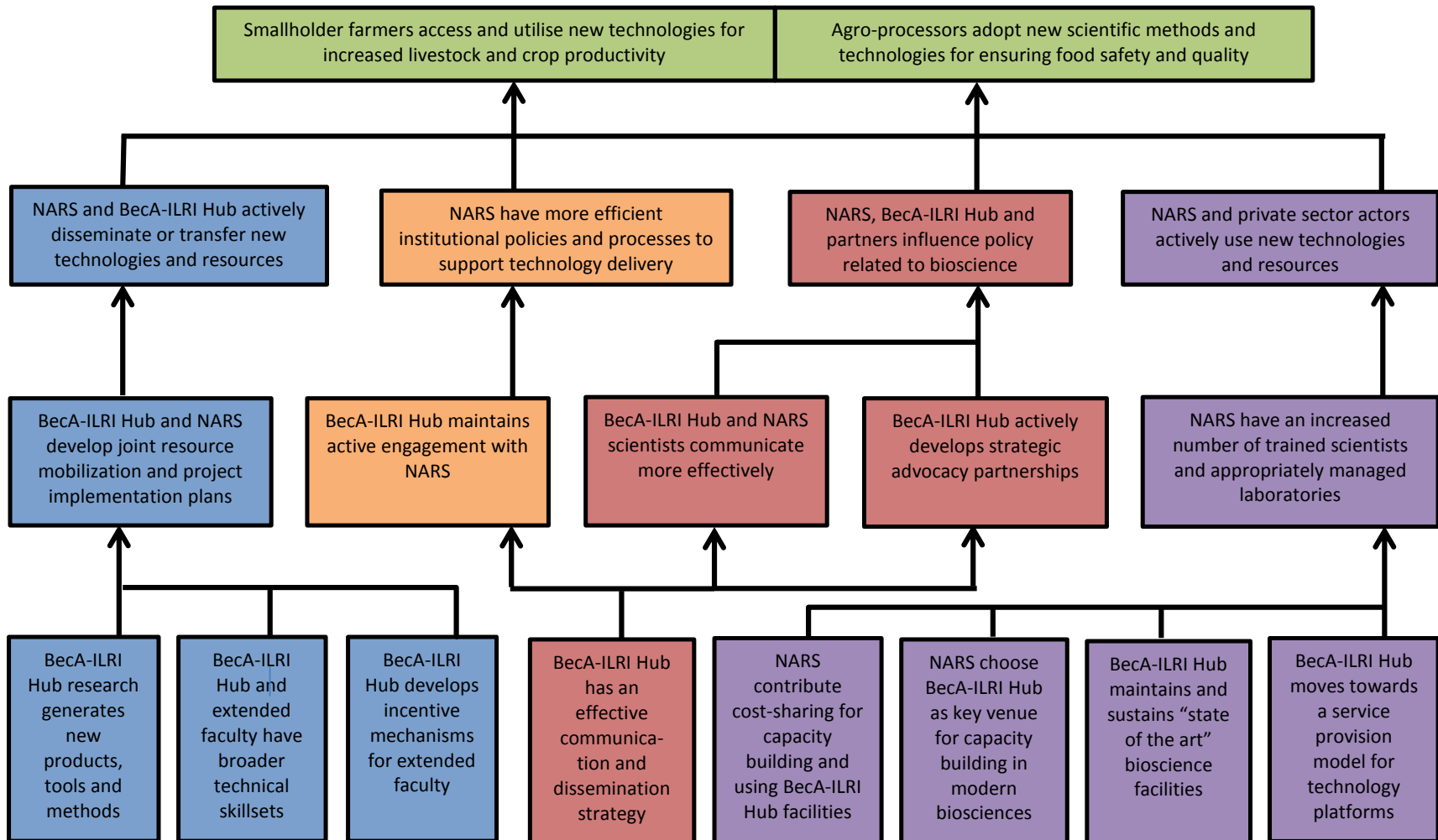
Program strategy and objectives

Mission: Mobilizing biosciences for Africa's development

OBJECTIVES: The mission is achieved through the program's contribution to:

- Enabling research to harness the potential of the biosciences to contribute to increasing agricultural productivity, improving food and nutritional safety and security.
- Education: contributing to the education and training of the next generation of African agricultural research leaders and scientists.
- Innovation: promoting the development, delivery and adoption of new technologies to address key agricultural productivity constraints.

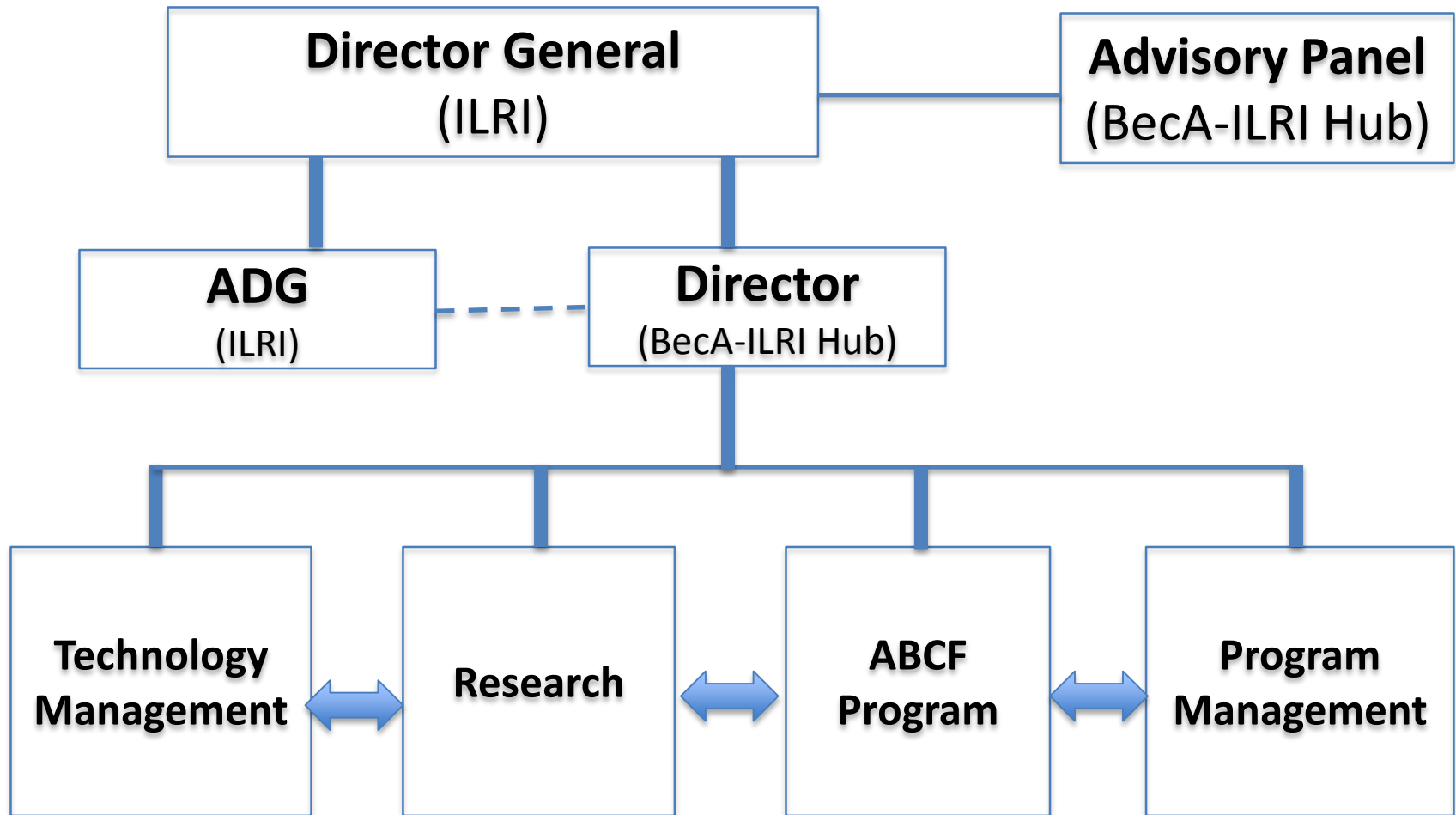
BecA-ILRI Hub Theory of Change



Core operations

- Bioscience facility and Technology platforms
 - a) Bioscience facility
 - b) Genomics, bioinformatics, synthetic biology, diagnostics, tissue culture & transformation, molecular breeding
- Africa Bioscience Challenge Fund (ABCF) Capacity Building program
 - a) Research placements
 - b) Short term training
 - c) Institutional capacity building
 - d) Communities of practice
- Research
 - Livestock productivity, crop improvement, nutrition and food safety, climate change, neglected crops and livestock

Structure and Teams



TEAMS (04)

Contributions to CRPs

CRP phase I

A4NH

L&F

CRP phase II

A4NH

Livestock

Big Data/ICT

Excellence in Breeding

Cross programs linkages

- Animal and Human Health
- Livestock genetics
- Forage
- CapDev

Cross program opportunities

- Opportunities to work with or have access to the research platforms
- Access to technology platforms and related services, and available lab infrastructure available to clients
- Mentorship of African scientists and students from CG or more CG scientists serving as faculty.
- Diverse partnerships developed with the NARS in the region through which research collaborations can be initiated and institutions strengthened

Regions



- **18 countries in E&C Africa**
- **West Africa**
- **Southern Africa**

Resource mobilization opportunities

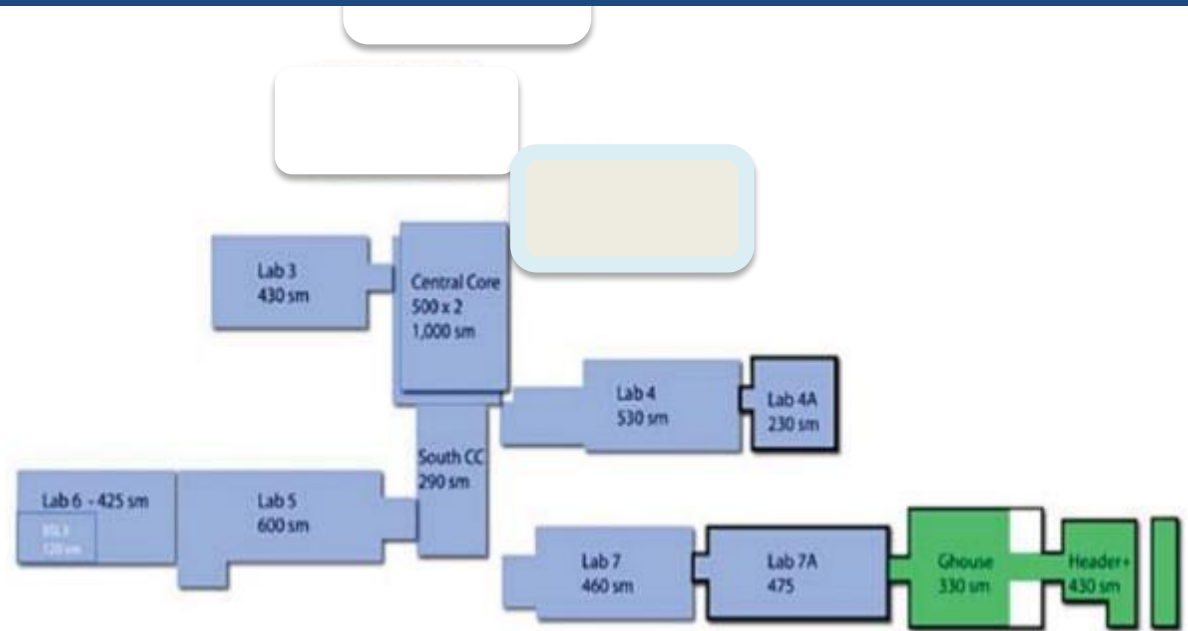
- John Innes Center (A Center for Accelerating Crop Improvement in Africa-ACACIA)
- Global Challenges Research Fund (GCRF) –JIC/Rosslin
- North Carolina State University (NCSU)
- Washington State University (WSU)
- Queensland University of Technology (QUT)

Bioscience Facility Management and Technology Platforms



The Bioscience facility

- Lab space area: ~ 5000 m² for livestock, crop and microbial research
- Training lab
- BSL1, BSL2 and BSL3
- Plant growth facility
- Brachiaria experimental plot



Who are the users?



We enable access to:

- BecA-ILRI Hub Scientists
- ILRI Scientists
- African NARS scientists
- Advanced Research Institutions (ARI) (JIC, Colorado state Univ, Texas A&M) including the private sector (Syngenta flowers, CropNuts)
- Hosted institutions (CG centers & ARI)

Hosted institutions at the BecA-ILRI Hub



Laboratory safety compliance

Work with Environment
Occupational Health and safety
(EOHS) office to ensure;

- adherence to Biosafety policies for safe working environment (BSL1, BSL2, BSL3)
- compliance with regulatory requirements
- facility is inspected annually by the National Biosafety Authority, Kenya Plant Health Inspectorate Service and Dept of Veterinary Services



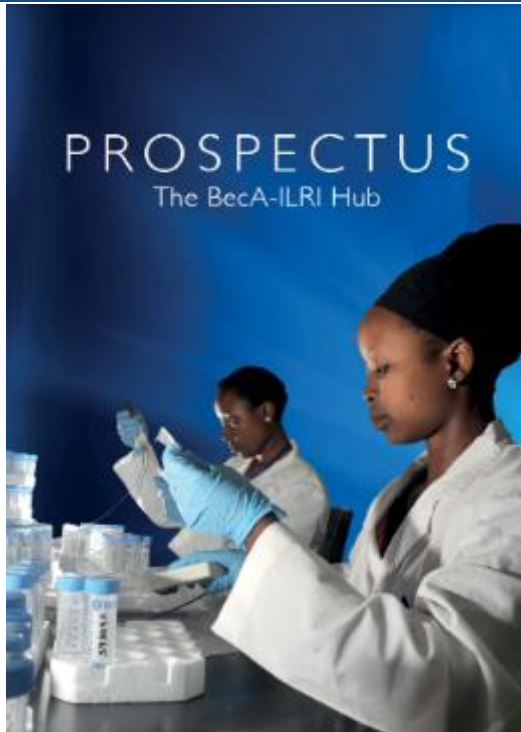
Facility Maintenance

Work with ILRI Engineering service unit to ensure;

- timely repair, installation and preventative maintenance of equipment
- equipment procured is 'fit for purpose'
- facility maintenance and space modifications suitable to the laboratory users



Technology platforms at the BecA-ILRI Hub



<http://hub.africabiosciences.org/media-center/publications>

1. Genomics platform
2. Bioinformatics platform
3. Molecular Breeding platform
4. Mycotoxin and Nutrition analysis platform
5. Tissue culture and plant transformation
6. Synthetic Biology
7. Diagnostics platform
8. Plant pathology
9. Azizi Biorepository



Technologies: Genomics platform

Low throughput sequencing

*ABI 3130-xl
3500-xl*



ABI 3730-xl



ABI



Medium throughput seq.

*454 GS
pyrosequencer*



High throughput sequencing

Illumina MiSeq/HiSeq



Applications

1. Viral genomics (RVF,ASF..)
2. Metagenomics (microbiome analysis, pathogen discovery)
3. Disease surveillance
4. Diagnostics
5. Genotyping

The Integrated Genotyping Service and Support (IGSS)



- Joint venture BecA-ILRI Hub & Diversity Arrays Technology Pty Ltd (DArT)
- Accelerate the rate of development and release of new crop/livestock commodities using DNA marker technology
- Genome profiling and informatics, data management and decision support
- A 5-year project funded by the BMGF



Laboratory Access fees



- USD12,500/annum (USD1042 monthly)
- Pro-rated to minimum of one week

Lab access fees coverage

- General access to and use of laboratories and equipment;
- Access to glassware cleaning and sterilization services;
- Access to laboratory cleaning and waste management services;
- Access to personal protective equipment (lab coats and other materials), first aid and other safety kits;
- Access to a working environment, restricted to only authorized users through an access control system;
- Access to specialized imaging facilities (microscopes, FACS, etc.);
- Access to computers with specialized analysis software;
- Procurement of commercial reagents, consumables and equipment, and on-site freezer program;
- General lab management and biosafety support;
- Storage facilities (fridges, freezers, deep freezers);
- Access to fee-for-use services offered by specialized units, including Segolip unit, BSL3 facility, plant growth facilities, High density genotyping (IGSS), etc.

Thank you

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Mobilizing biosciences for Africa's development

<http://hub.africabiosciences.org>

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