

TRAINING WORKSHOP CONCEPT NOTE

Title	Animal Quantitative Genetics and Genomics (AQGG)
Background	<p>Projected increases in animal protein demand and consumption are likely to maintain livestock's position as one of the fastest growing sub-sectors in agriculture for the foreseeable future, particularly in low-income and emerging economies. Genetics and genomics provide one of the greatest opportunities to sustainably improve livestock productivity in these economies, in addition to maintaining genetic diversity. The design and application of effective breeding Programs are underpinned by understanding of sound genetic principles. Recent advances in molecular biology, implies that genetic progress can be accelerated by means of genomic selection. However, the application of successful breeding Programs continues to be slow in Africa due to lack of required capacity and design capability. Moreover, the use of genomics in identifying genes associated with production and survival in the harsh climatic conditions of Africa has not received adequate attention.</p> <p>A number of NARS in Africa continue to use animal research methodologies which are outdated. In addition, most of them lack access to some of the required software for analyzing animal breeding data. This training course seeks to address skills gaps in methodologies in animal quantitative genetics and genomics to increase the capacity of African scientists and institutions to conduct research in animal genetics using methods which are based on recent advances, access to necessary software and ability to design breeding Programs for livestock improvement in Africa.</p>
Objective(s)	<p>To give Animal breeding researchers from African NARS the working knowledge of methods in animal quantitative genetics and genomics that can be applied to address technology gaps in their own breeding research Programs, and which can be disseminated to other researchers at their home institutes.</p>
Scope of the training workshop	<p>Selected applicants will attend an intensive 10-day training course consisting of lectures and hands-on practical training in population genetics, mixed linear models, variance component estimation, genome organization, genetic markers, GWAS and genomic selection among other topics. Participants will also be taught practical programming skills and the use of several software.</p>

Expected outputs and outcomes

Outputs

At least 20 animal breeding researchers from African NARS equipped with practical knowledge of methods and software in animal quantitative genetics and genomics.

Outcomes

Strengthened practical skills in methods for animal quantitative genetics, genomics and use of animal breeding tools for application to breeding research in NARS in the East and Central Africa region.

Training Approach

The workshop will comprise series of lectures, extensive hands-on practical, group discussions and experience sharing by participants. Pre- and post-workshop evaluations will be conducted by both participants and trainers.

Who can apply / selection criteria

The Hub is seeking applicants from African NARS who require basics skills in molecular biology and bioinformatics to support their research. The training is targeting early career researchers in NARS, based on evidence of productive research, relevance of the workshop to applicant's current research, and visible engagement in agricultural research within a national research institute or University. Additionally, applicants must meet the following criteria:

- The call primarily targets nationals of BecA countries (Burundi, Cameroon, Central Africa Republic, Congo Brazzaville, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Kenya, Madagascar, Rwanda, São Tomé and Príncipe, Somalia, South Sudan, Sudan, Tanzania, Uganda).
- Strong affiliation with a national agricultural research program or institution or University in any of the above BecA countries.
- Currently engaged in agricultural biosciences research.
- Holders of MSc or PhD, or equivalent, in biosciences or a related subject.
- Good working knowledge of written and spoken English.
- Endorsement by applicant's home institution through Letter of nomination/recommendation from head of department or institution head.
- *Women are particularly encouraged to apply.*

Key Dates

- **Closing date for applications:** midnight 31st March 2017 (Nairobi time).
- **Successful applicants will be notified by:** 7th April 2017.
- **Workshop Dates:** 19th June – 30th June, 2017.

Workshop Venue

BecA-ILRI Hub, Nairobi, Kenya.

Donors

The training workshop is sponsored by;

- The Australia Government Department for Foreign Affairs and Trade (DFAT) through a partnership between Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) and the BecA-ILRI Hub;
- The Bill & Melinda Gates Foundation;

Development Cooperation Agency;

- The Syngenta Foundation for Sustainable Agriculture;
- The Department for International Development (DFID)

Partners

The training course will be conducted in collaboration with the College of Agricultural and environmental science (CAES) at the University of Georgia, USA. The faculty and staff of the CAES are dedicated to discovering, teaching and delivering the science required for healthy living. The animal breeding and genetic group at CAES is a national and internal leader in genetic improvement of livestock and poultry species with expertise ranging from classical quantitative genetics to genomics and bioinformatics. Faculty members in the animal genetic group have strong international research collaboration and capacity building activities including teaching of advanced courses worldwide.

For any inquiries about this course please contact either Raphael Mrode (r.mrode@cgiar.org) or Wellington Ekaya (w.ekaya@cgiar.org)