

eBioKit bioinformatics workshops in Dar es Salaam, Tanzania



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In collaboration with [H3Abionet](http://www.h3abionet.org)¹ and [BecA-ILRI Hub](http://www.hub.africabiosciences.org)², two eBioKit-based bioinformatics workshops were held from 10-14 December 2013 in Dar es Salaam, Tanzania. The workshops aimed to strengthen bioinformatics research capacity

in Tanzania, and facilitate discussions on bioinformatics tools for diagnostics, pathogen discovery, genome evolution, and other applications relevant to improving health and increasing agricultural productivity in Tanzania.

Experiences gained by Prof. Erik Bongcam-Rudloff at the [Swedish University of Agricultural Sciences](http://www.slu.se)³ and Dr. Etienne de Villiers at [KEMRI-Wellcome Trust Research Programme](http://www.kemri-wellcome.org)⁴ in conducting bioinformatics training courses in Kenya, Uganda, Mauritius and Zimbabwe over several years, showed that it was difficult to successfully teach and demonstrate several bioinformatics resources. This was mainly owing to limited network connections and computing infrastructures in these countries. For this reason, a bioinformatics platform, the eBioKit, was engineered to ease the administrative burdens both of installing bioinformatics software and of regularly updating large databases over unreliable and slow network connections. The eBioKit is a self-contained computing platform and database system, containing more than 200 bioinformatics applications, including EMBOSS, NCBI BLAST,



Figure 1. Researchers at MARI during the bioinformatics training using the eBioKit.

1 www.h3abionet.org

2 hub.africabiosciences.org

3 www.slu.se

4 www.kemri-wellcome.org



Figure 2. Participants to the Bioinformatics training workshop at MUHAS using the eBioKit.

Galaxy, Ensembl database systems, and several other specific crop or organism databases of relevance to African scientists. The eBioKit used in Tanzania was the latest version of the platform, version 3.

[The Mikocheni Agricultural Research Institute](http://www.ari-mikocheni.org)⁵, Tanzania, partnered with SLU and BecA-ILRI Hub to host this one-week intensive workshop, to inspire collaboration between bench scientists and bioinformaticians through hands-on training in sequence data analysis using the eBioKit. Ten researchers from MARI were introduced to the eBioKit's tools and databases. During the workshop, it was agreed that a second workshop with at least 20 participants would be organised during 2014.

[The University of Dar es Salaam](https://udsm.ac.tz)⁶ acquired an eBioKit under the aegis of the H3ABionet project; in collaboration with H3ABionet, we simultaneously organised a second eBioKit bioinformatics workshop at the Muhimbili University of Health and Allied Sciences (MUHAS), [Dar es Salaam](http://www.muhas.ac.tz)⁷. This workshop focused on health researchers, and included 25 participants from MUHAS,

University of Dar es Salaam, Muhimbili Wellcome Programme, PWANI University, Kenya, and several participants from nodes in H3ABionet.

During the workshop, two individuals were instructed in managing and maintaining the eBioKits that were permanently installed at MARI and PWANI University. These systems are now accessible to researchers and students at these institutions for bioinformatics teaching or research purposes.

The workshops included sessions on basic introduction to the Linux operating system, classical bioinformatics tools in the EMBOSS package, introduction to Next Generation Sequencing and Galaxy system, introduction to biological databases and Ensembl, Genome Wide Association Studies (GWAS) and UGENE, a GUI-based bioinformatics tool for desktop environments. Trainers on the course were Prof. Erik Bongcam-Rudloff (SLU), Dr. Maria Wilbe (SLU), Dr. Juliette Hayer (SLU), Dr. Etienne de Villiers (KWTRP) and Dr. Mark Wamalwa (BecA-ILRI).

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5 www.ari-mikocheni.org

6 <https://udsm.ac.tz>

7 <http://www.muhas.ac.tz>