International Journal of Drug Research and Technology

Available online at http://www.ijdrt.com

BIOINFORMATICS INFRASTRUCTURE IMPLEMENTATION FOR GENOMICS RESEARCH

Victor Osamor*

Centre for Bioinformatics and Systems Biology, Faculty of Science, University of Khartoum, Khartoum, Sudan

EDITORIAL

While pockets of bioinformatics excellence have formed in Sudan, the availability of expertise and resources has generally restricted large-scale genomic data analysis. A pan-Sudan bioinformatics network, H3ABioNet, was developed to develop capacity specifically to allow researchers from H3Sudan (Human Heredity and Health in Sudan) to analyze their data in Sudan. H3ABioNet has set out to develop main bioinformatics infrastructure and genomics research capabilities in different areas of data collection, transfer, storage and analysis.

Various tools have been developed to meet the needs of H3 Sudan researchers and other science communities on the continent for genomic data management and analysis. To create an accurate image of network efficiency within Sudan and between Sudan and the rest of the world, NetMap was created and used, and Globus Online has been rolled out to promote data transfer. In order to track participant participation, a participant recruitment database was developed and data is harmonized by the use of ontologies and regulated vocabulary. The structured metadata will be incorporated to provide H3Sudan data and biospecimens with a search facility. Several data analysis platforms that offer a wide variety of bioinformatics tools or workflows are being introduced by H3ABioNet, such as Galaxy, the Job Management Framework, and eBiokits. A series of reproducible, portable and cloud-scalable pipelines are also being built and dockerized to support the multiple types of H3Sudan data to allow execution on multiple computer infrastructures. In addition, new instruments for the analysis of uniquely divergent Sudan data and for the downstream interpretation of prioritized variants have been created. An online bioinformatics helpdesk funded by extensive

consortium expertise has been developed to provide support for these and other bioinformatics queries. Further support is offered by means of different types of training in bioinformatics.

The development of funding for infrastructure and human resources through H3ABioNet has contributed significantly to the creation of Sudan scientific networks, data processing facilities and training programs over the past four years.

Correspondence Author:

Victor Osamor*

Centre for Bioinformatics and Systems Biology, Faculty of Science, University of Khartoum,

Khartoum, Sudan E-mail: viosa.su@gmail.com

INTERNATIONAL JOURNAL OF DRUG RESEARCH AND TECHNOLOGY