H3ABioNet
## Pan African Bioinformatics Network for H3Africa

H3ABioNet Consortium

The H3Africa Bioinformatics Network (H3ABioNet) is a collaborative project encompassing 15 African countries that is developing sustainable Bioinformatics capacity within Africa to provide bioinformatics support for on-going H3Africa research projects characterising human heredity, health and diversity on the African continent. H3ABioNet is a collaborative network spanning more than 30 research Institutes and Universities within Africa which are at various levels of development based on their current Bioinformatics capacity and infrastructure. The long term goal of H3ABioNet is to ensure the development of all African Nodes to international standards by providing skills, expertise, resources, physical hardware and intellectual development through working on joint research projects between various partner Institutes and H3Africa projects while providing bioinformatics support to the H3Africa projects. H3ABioNet is currently providing training in current biomedical high throughput technologies, establishing a collaborative internship programme and joint research projects, assisting in hardware choices and procurement, developing various data transfer and archiving protocols, and developing Standard Operating Procedures (SOPs) for a variety of bioinformatics workflows specific to the anticipated H3Africa data being generated. By the various mechanisms highlighted above, H3ABioNet is enabling researchers from these African Institutes and the H3Africa research projects to develop their Bioinformatics capacity and propagate the knowledge they acquire within their home Institutions to strengthen existing research networks and help build the next generation of collaborative research networks within Africa.

Education and Training

H3ABioNet is providing high quality bioinformatics training in Africa through numerous workshops being held in various locations. Ten workshops ranging from grant management to a five week postgraduate bioinformatics workshop have been held in Kenya, Ghana, Nigeria, South Africa, Tanzania and have currently trained 224 people.
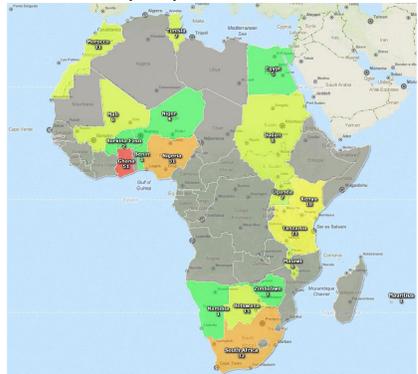
H3ABioNet is leading the effort to develop a Bioinformatics curriculum and syllabus, identify and develop trainers for these topics in order to build capacity within Africa. H3ABioNet allows one to propose a training workshop and provides internships for H3Africa members wishing to train in bioinformatics laboratories.

Distribution of H3ABioNet Nodes in relation to H3Africa project primary award sites

- 🟠 H3Africa Project (primary award site)
- 🟡 H3ABioNet Node
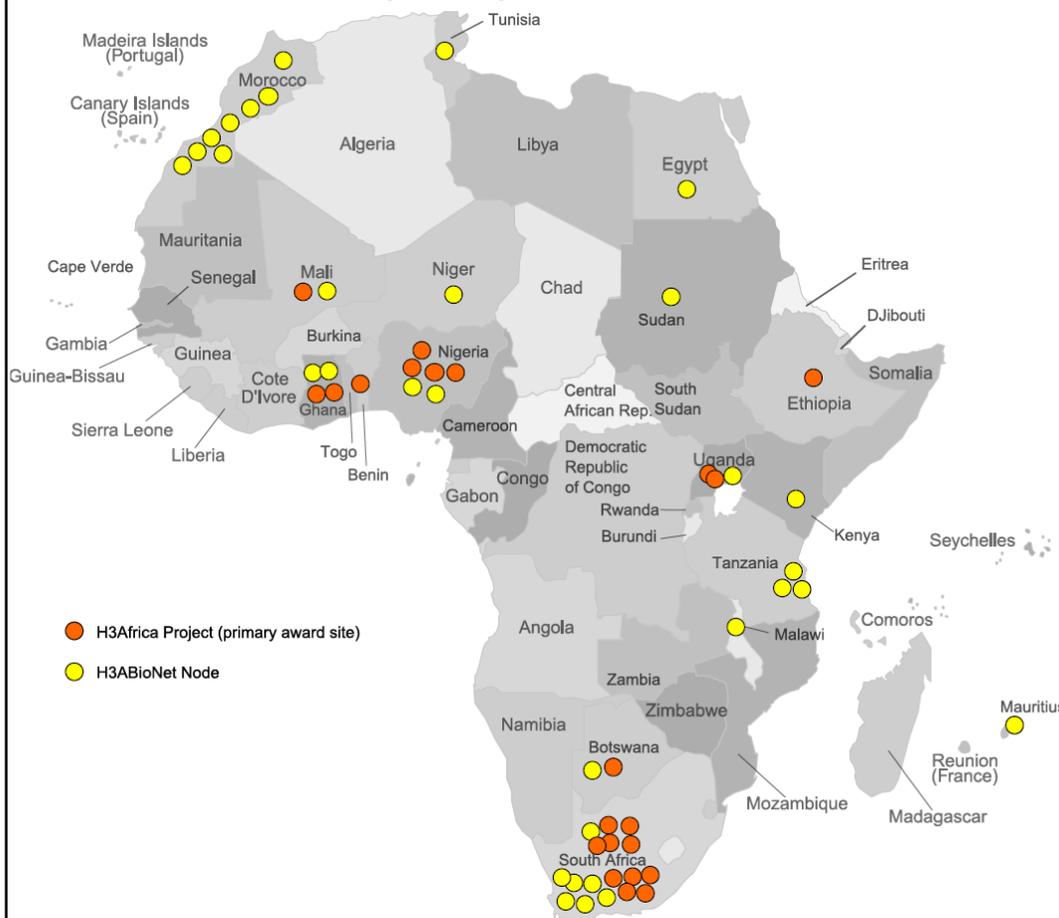
Infrastructure

H3ABioNet is developing the hardware infrastructure capacity of African Bioinformatics laboratories to deal with H3Africa data analyses requirements and has negotiated the purchase of over $400,000 worth of hardware and storage equipment for the Nodes. H3ABioNet is currently developing a data archive solution for the secure storage of H3Africa data before submission to public repositories. Internet connectivity is being mapped between the various nodes to provide estimates of data transfer speeds throughout Africa in anticipation of transferring the H3Africa data generated. Data transfer protocols such as Grid ftp and Globus online are being tested and installed at the various nodes to enable safe, secure and uninterrupted transfer of H3Africa data. Data management SOPs for the secure submission and storage of the H3Africa data have been created and will be presented during the H3ABioNet data management workshop in Cape Town. H3ABioNet will develop tools and analyses pipelines to enable the integration of H3Africa project data depending on the needs of various H3Africa projects.
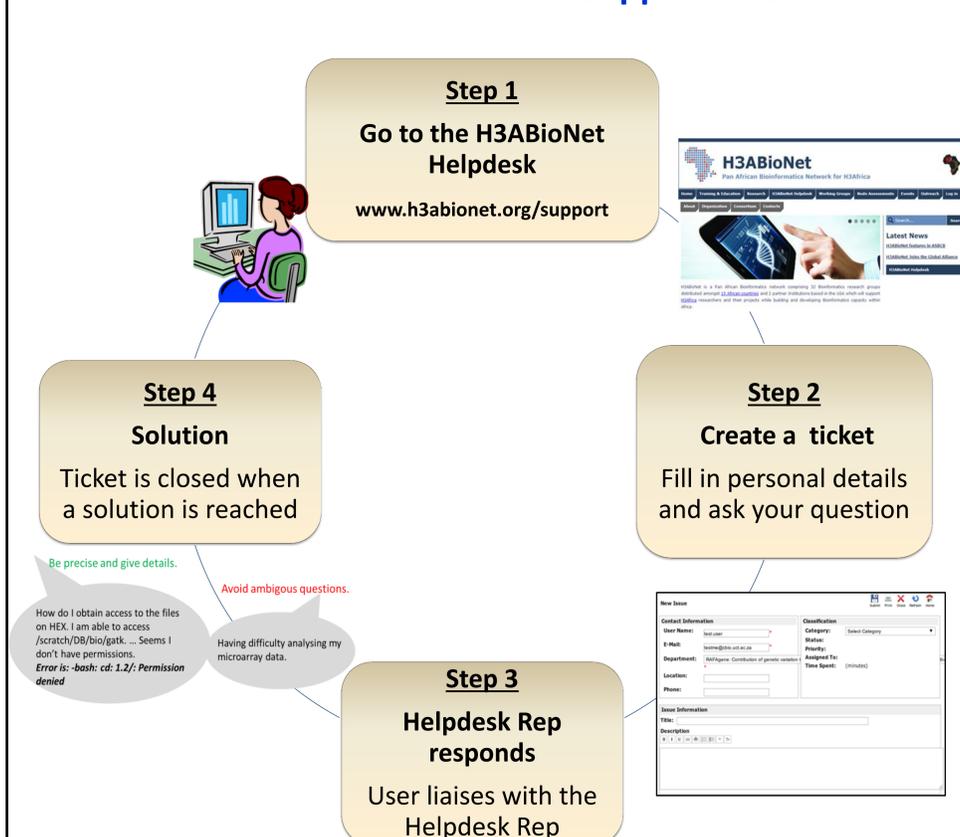
Node Assessment and Accreditation

The Node Assessment and Accreditation program is a ground breaking initiative by the H3ABioNet network to assess the ability of its Nodes to analyse the types of data that are being produced by H3Africa research projects. Its main components are SOPs which lay out the workflows and software components to be used for the analysis of NGS and GWAS data; practice datasets that the Nodes can use for self-assessment; generation of synthetic test datasets to be used during the formal assessment; recommendations for the preparation of analysis reports; and a protocol laying out the practical details of the assessment exercise. An external panel of international experts has been tasked with evaluating the procedures and assessing the quality of the reports produced by the candidate Nodes. This will ensure that all African H3ABioNet Nodes are able to handle and process next generation genomics data at internationally acceptable standards and perform high quality analyses for the H3Africa projects.
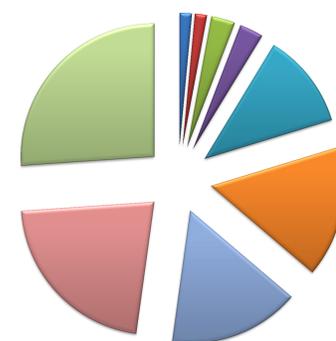
Research

Various H3ABioNet research projects are developing tools for the H3Africa projects such as clinical patient databases, admixture mapping and ancestral proxy determination for GWAS studies, exome and variant calling pipelines, SNP structural and functional annotation tools. H3ABioNet is fostering collaborative projects within the network between different nodes with 5 projects of varying scope in progress. Currently, H3ABioNet is collecting information on the various expertise and datasets available within the network to enable researchers to identify groups to work with. A research group can currently propose a research project and the H3ABioNet research working group will endeavour to match the project requirements with the requisite skills:
http://surveys.h3abionet.org/researchproposal
H3ABioNet will be embarking on creating different workflow diagrams for the commonly used bioinformatics analyses pipelines which will be hyperlinked to information about the rational of the analysis step and the various tools available.

User Support - H3ABioNet Helpdesk

Step 1
Go to the H3ABioNet Helpdesk
www.h3abionet.org/support

Step 2
Create a ticket
Fill in personal details and ask your question

Step 3
Helpdesk Rep responds
User liaises with the Helpdesk Rep

Step 4
Solution
Ticket is closed when a solution is reached

Distribution of Submitted H3ABioNet Helpdesk Questions per Category

- 🟦 NetCapDB
- 🟥 Software licence Request
- 🟩 Software Development / Programming
- 🟪 Genotyping arrays
- 🟦 Website / Mailing List
- 🟧 NGS data
- 🟦 Other

www.h3abionet.org/support