H3ABioNet

H3ABioNet Monthly Newsletter Issue 9 : May 2014

Foreword

The main focus areas for us in May have been the five-week Postgraduate workshop at Covenant University, Nigeria, and preparing the documents for our second annual report to the NIH. The workshop had a few challenges with visas and illness, but the local team worked to overcome these. We are proud of the second annual report, but as usual, the restricted length of the report was simply too short to give full credit to all our activities for the year. However, we hope that these activities are adequately showcased in these newsletters. For example, you will see the annual reports from each of the working groups presented below.

In the last letter we reported that five H3ABioNet interns were selected. One of these is already complete and was very successful, two are still at their host institutions and two more arrive at their host institutions today. We look forward to reports on these internships from the trainees after return to their home institutions. We are about to start the Data management workshop in Cape Town, which will run from the 3rd-6th June, and in the 4th H3Africa Consortium Meeting yesterday (1st June), we had an excellent session with the H3Africa Education and Training working group to help with planning upcoming courses as a consortium.

The CBIO team has been working particularly hard on computing infrastructure, investigating the best solution for H3Africa data storage. This has been done in conjunction with the infrastructure working group and data management task force. Suresh has also patiently persisted with trying to get all the purchased servers delivered and is finally making headway. We have been fortunate to have Victoria Nembaware in our group in May to help out with many tasks such as updating the website and tracking training activities. June promises to be just as busy as year 2 starts drawing to a close. Our main focus will be on the Data management workshop, furthering the goals of the new African Bioinformatics Education Committee, and preparing to receive the first H3Africa dataset!

Prof. Nicky Mulder.

- **Education and Training**

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Education & Training Working Group (E&T WG) Annual Report	
Name of Chair (Node Name)	Oyekanmi Nashiru (NABDA)
Name of Co-Chair (Node Name)	Nicola Mulder (CBio)
Reporting Period	June 1st, 2013 to May 31st, 2014
Number of meetings held	18
Number of Nodes part of this working group	19
Number of members part of this working group	28
Report Compiled by	Sumir Panji, Nicola Mulder and Oyekanmi Nashiru

Summary of goals accomplished for the reporting period June 1st, 2013 to May 31st, 2014:

H3ABioNet has run the 4 week Train the Trainer workshop at ICIPE, the Introduction to eBioKits at ICIPE, a curriculum development workshop at the University of Botswana with members of the H3Africa CafGEN project, part funded a visual analytics workshop in Abuja, part funded an eBioKits workshop in Tanzania, wholly funded and Introduction to Bioinformatics workshop in Ghana hosted by the NMIMR node which included 2 participants from the H3Africa Kidney Disease Network and 1 person from the AWI-GEN project site. Additionally, the second 5 week H3ABioNet workshop was held in May at the CUBRe node in Ota, Nigeria. H3ABioNet provided 5 travel fellowships for members from different Nodes to attend a 4 day workshop on GWAS hosted by the Wits Bioinformatics Unit. In total 153 people from all over Africa have received some training in bioinformatics (see graph below):
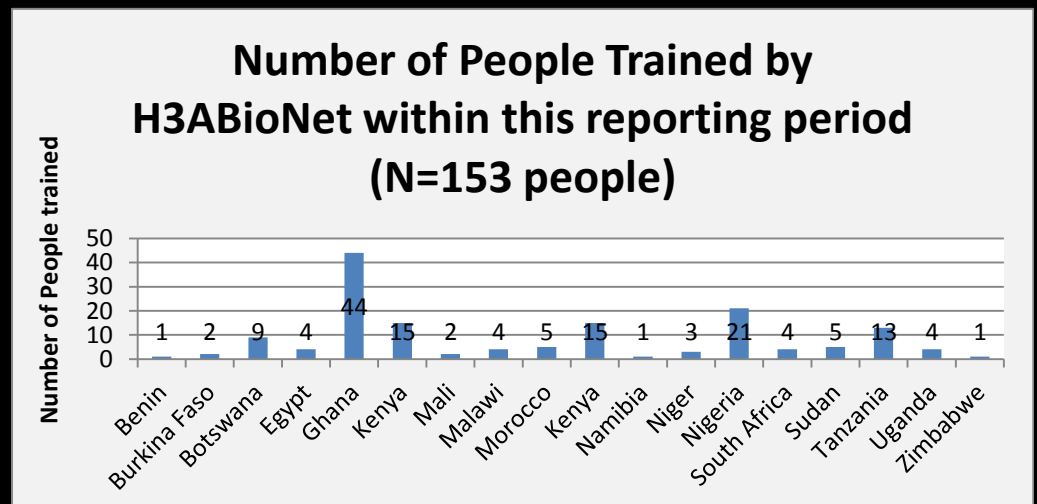

**Figure 1: Number of people trained by H3ABioNet and region for this reporting period.**

The H3ABioNet internship programme has also been initiated with a total of 6 interns selected by the H3ABioNet based on their submitted proposals. These include one student from Tunisia to be hosted by Rhodes University, one from Botswana hosted by Wits University, two from Tanzania to be hosted by the University of Cape Town,

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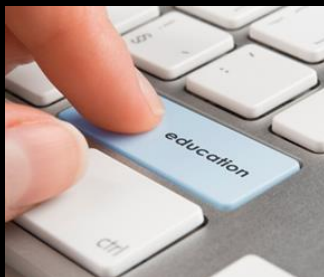
- **Education and Training**

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one student from Tunisia hosted by the University of Illinois, and one from Nigeria hosted by a laboratory in Germany. The Botswana student internship is complete and was a big success, the Nigerian student has started his internship and the remaining internships are starting imminently.

H3ABioNet hosted a successful bioinformatics curriculum development at the University of Botswana which included stakeholders from Kenya, Botswana, Nigeria, Tunisia, Zimbabwe, Sudan, South Africa, Tanzania amongst other countries who will imminently establishing a bioinformatics degree programme. Speakers included the head of the ISMB education working group, Professor Lonnie Welch, Dr. Patricia Palagi from the SIB amongst others who discussed their established programmes, the challenges they faced and some suggested recommendations. The outcome of the meeting was the decision of the core and elective modules, the number of contact hours and the establishment of an African curriculum development working group to help create the syllabus and content for each of the modules (http://www.h3abionet.org/training-and-education/h3abionet-courses/18-h3abionet-courses/h3abionet-courses-past/115-h3abionet-bioinformatics-curriculum-development-workshop). The workshop content and report is available at the above url.

Online educational content for various topics in bioinformatics, biology, statistics, ethics and computer science has been identified and will be undergoing curation and links to that content will be made available via the website.

Summary of highlights / achievements of the working group for the reporting period June 1st, 2013 to May 31st, 2014:

- The provision of training for 153 people from all over Africa in various topics ranging from GWAS, statistics, NGS, biological databases and programming.
- The selection and placement of the first set of H3ABioNet interns.
- The delivery of an NGS workshop by one of the participants from the ICIPE Train the Trainer workshop, Majdi Nagara, in Tunisia.
- The determination of the core and elective modules needed for a bioinformatics degree programme and formation of an African bioinformatics curriculum development working group.
- Compilation of online educational source material for curation.
- Involvement of two other members from the ICIPE Train the Trainer workshop in the development of an African bioinformatics curriculum and the curriculum. development workshop (Benjamin Kumwenda from Malawi Medical College and Angela Mokolo from the University of Ibadan).
- Publication of the current status of bioinformatics education in Nigeria by the E&T WG Chair and members of the H3ABioNet Nigerian Nodes; PMID:24763310
- A training module for the H3ABioNet CUBRe Postgraduate 2014 workshop provided from the Bioinformatics Unit at the University of the Witwatersrand live via the Vidyo system from NADBA to the classroom in Ota, Nigeria.

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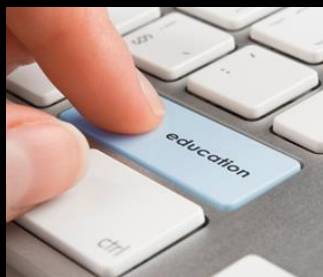
- **Education and Training**

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Summary of goals <u>not</u> accomplished and any challenges faced by the working group for the reporting period June 1st, 2013 to May 31st, 2014:

A key challenge has been to get all the training material videos edited and placed on the website due to logistical challenges in obtaining the recordings and the editing that still needs to be done and the approval required by the lecturers of the edited content before these recordings can be made available.

Another key challenge has been the establishment of the webinar / seminar series given the different time zones within Africa and the logistical scheduling of an hour slot between personnel from all the different Nodes to view a seminar / webinar at the same time. Avenues that are being investigated is to have students present their work via Skype and interested parties can log in and view the presentation and provide feedback to the students. Another option would be to view pre-recorded webinars on current topics in genomics and open a forum within the website for the viewers to discuss the topics. A set of suitable webinars has been identified: https://www.genome.gov/27552686.

A challenge that was faced for the H3ABioNet CUBRe Postgraduate 2014 workshop was the difficulty in the trainers obtaining visas for to travel to Nigeria, in particular the South African trainers, hence the live streaming of the bioinformatics workshop by the trainer from the Bioinformatics Unit at the University of the Witwatersrand to the classroom in Ota, Nigeria.

Summary of upcoming goals the working group will be working on from June 1st, 2014 to May 31st, 2015:

- The E&T WG will be reviewing the milestone for the working group and will derive more specific milestones for reporting on.
- A second call for internships and selection and placement of these interns.
- The data management workshop, a metagenomics workshop, the third 4 to 5 week bioinformatics workshop, an intermediate bioinformatics workshop and possibly a follow up to the systems administration workshop will be held.
- Students will have a chance to present some of their research projects to members of H3ABioNet's SAB during the annual general meeting.
- The placement of workshop and training material on the website.
- The curation and updating of online educational material identified.
- Development of a monitoring and evaluation training plan.
- Establish a seminar / webinar programme.

Infrastructure

Infrastructure

Infrastructure Working Group (ISWG) Annual Report	
Name of Chair (Node Name)	Alia Benkhala
Name of Co-Chair (Node Name)	Scott Hazelhurst
Reporting Period	June 1st, 2013 to May 31st, 2014
Number of meetings held	15
Number of Nodes part of this working group	13
Number of members part of this working group	33
Report Compiled by	Sumir Panji

Summary of goals accomplished for the reporting period June 1st, 2013 to May 31st, 2014:

The Infrastructure working group (ISWG) has accomplished the following within the reporting period:

- Re-drafted the milestones to make them more specific and easier to work on and track progress.
- Created SOPs and documentation for how to install Linux based operating systems for the various Nodes who are unfamiliar with these types of OS.
- Developed Python code to map out the internet connectivity between the various H3ABioNet nodes.
- Is providing support to the Nodes in helping them to install and run the Python code to monitor their internet connectivity.
- Investigated the various options for the data storage / archive solution to house the H3Africa data with 3 solutions being proposed and to be decided upon by the ISWG.
- Engaged various stakeholders such as CSIR, SAGrid, CHPC, UCT-ICTs to determine what the possible options for the data archive are.
- Has been testing various data transfer mechanisms.
- Optimising the parameters of Globus online for data transfer.
- Is currently assisting the Nodes to install Globus online endpoints to enable data transfer.
- Created documentation on installing the Globus online endpoints for the Nodes which are not ready in English and French.
- Created the data management SOPs and processes to be implemented for the H3Africa data.
- Providing support to the TrypanoGEN project in defining their server requirements and negotiating with various vendors.
- Helped to open negotiations between the Schizophrenia H3Africa project PIs and UCT-ICTs to enable data transfer and storage under the new UCT eResearch platform.
- Is continuously following up on the status of the server purchases with the vendors.

Infrastructure

Summary of highlights / achievements of the working group for the reporting period June 1st, 2013 to May 31st, 2014:

- Creation of the data management SOPs and processes for the H3Africa data.
- The various options for the data archive solution and settling on which one to implement.
- Development of the NetMap Python code and deployment to the Nodes.
- Assisting the various Nodes to install Globus online endpoints.

Summary of goals <u>not</u> accomplished and any challenges faced by the working group for the reporting period June 1st, 2013 to May 31st, 2014:

- The delay and poor communication by the vendors in tracking and delivering the servers to the various Nodes that have purchased them.
- The delay in the purchasing and delivery of eBioKits to the various nodes has delayed all the eBioKit milestones.
- Determine what interfaces and data the H3Africa PIs would like integrated and pipelines they would like to use, without getting specifications from them it would be pointless in trying to develop tools which they might not use.

Summary of upcoming goals the working group will be working on from June 1st, 2014 to May 31st, 2015:

- The milestones will be revised and more specific ones created and the ToRs updated.
- A decision on which of the three options for the data storage / archive solution to be implemented.
- Implementation of a data storage / archive solution for the H3Africa data.
- Further testing of various data transfer mechanisms to derive 2 possible solutions.
- More Nodes installing the NetMap and Globus online end points.
- Internet connectivity monitoring of bandwidth between all the Nodes via NetMap.
- Documentation for the systems administrators and looking at monitoring and automating updates using Puppet recipes which can be shared by the various Nodes.
- A co-ordinated effort to get the eBioKit units to their respective Nodes so these milestones can be met.
- Investigating the possibility of locally mirroring the BioQ databases (http://bioq.saclab.net/).
- A data management workshop will be held for the H3Africa data managers on the requirements of the data that they will submit, the H3Africa data access and sharing policy and the H3ABioNet data management and transfer SOPs that have been created.

- Infrastructure

- Research

Research

Research Working Group (RSWG) Annual Report	
Name of Chair (Node Name)	Prof. Ezekiel Adebiyi (CUBRe)
Name of Co-Chair (Node Name)	Dr. Julie Makani (MUHAS)
Reporting Period	June 1st, 2013 to May 31st, 2014
Number of meetings held	11
Number of Nodes part of this working group	18
Number of members part of this working group	25
Report compiled by	Ezekiel Adebiyi and Sumir Panji

Summary of goals accomplished for the reporting period June 1st, 2013 to May 31st, 2014:

The Research working group had been working on a graphically represented set of commonly used workflows for various bioinformatics analysis such as genotyping to GWAS or variant calling which could be placed on the H3ABioNet website, using templates from members who provided pre-existing workflows from their Institutions and others from the Node Accreditation Working group who gave permission for the SOPs they were developing to be used.

Relevant research collaborations were also initiated by the RSWG. Currently, these include:

Collaborative Project Title	Nodes Involved	People Involved
Design of Phenotype Database and Surveillance Programme for H3Africa projects	IPT / MUHAS / MLWTP	Kais Ghedira, Amel Ghouila, Alia Benkhala (Co-PI), Sharon Cox (Co-PI) Evarist Masaki, Freddie Mbuya, Bruno Mmbando, Raphael Sangeda Julie Makani (Co-PI), Dean Everett (Co-PI)
Design and Implementation of a Sickle Cell Disease (SCD) database and Analysis modules	IPT / MUHAS / MLWTP	Kais Ghedira, Amel Ghouila, Alia Benkhala (Co-PI), Sharon Cox (Co-PI), Evarist Masaki, Freddie Mbuya, Bruno Mmbando, Raphael Sangeda, Julie Makani (Co-PI), Dean Everett (Co-PI)
Immunoinformatics and nanoantibody binders: Sequence and structural analysis of VHH sequences	RUBi / IPT	Ozlem Tastan Bishop (Co-PI), Balkiss Bouhaouala-Zahar (Co-PI), Ayoub Ksouri, Dr Rahma Ben Abderrazek, Alia Benkahla, . Kais Ghedira
Human metabolic network modelling: contextualization of H3Africa projects high throughput data from pathological and drug-treated states and simulation of these states	CU / CPGR/IPT	Ezekiel Adebiyi (Co-PI), Judit Kumuthini (Co-PI) and Alia Benkhala (Co-PI)
Integration of multiple biomedical data sources for the study of phenotypic data and identification of candidate disease genes	IPT / MUHAS	Kais Ghedira, Amel Ghouila, Alia Benkhala (Co-PI), Evarist Masaki, Freddie Mbuya, Bruno Mmbando, Raphael Sangeda, Julie Makani (Co-PI),

H3ABioNet

- **Research**

Research

Summary of highlights / achievements of the working group for the reporting period June 1st, 2013 to May 31st, 2014:

The workflows that were prioritised to work on initially were the genotyping and GWAS workflows and the NGS variant calling workflows. The RSWG determined nodes which could collaborate based on complementary expertise and data and developed a template which aims to capture for each node the expertise they have and any potential datasets they have that would require specialised bioinformatics analyses to be undertaken in a collaborative framework for the analyses of these data. The RSWG is working in conjunction with the Curriculum Development Taskforce to achieve their goals. Currently, the WG is following up progress on the new research collaborations. Finally, the WG provided direction for the trainees at the just concluded H3ABioNet Bioinformatics Postgraduate Workshop to develop two collaborative projects, which the trainees worked on while at the workshop. The projects are entitled "Analysis of genetic variation associated with Uterine fibroid susceptibility among Africans" and "Workflow for structural and functional analysis of a hypothetical protein (with reference to crop genomes)". Currently concept notes are being developed to enable reviewing of the projects by a task force from the RSWG. Thereafter, milestones for the projects will be developed, so that the workshop participants can continue work on the projects. It is expected that publications and proposals for funding consideration will be reached at the end of the implementation of the milestones for both projects.

Summary of goals not accomplished and any challenges faced by the working group for the reporting period June 1st, 2013 to May 31st, 2014:

A major challenge has been the poor attendance of the RSWG meetings which has caused a number of meetings to be postponed.

Summary of upcoming goals the working group will be working on from June 1st, 2014 to May 31st, 2015:

As the focus of the RSWG has moved from tool development to research a number of goals will be worked on for the upcoming period that include:

- Defining of milestones for the period and updating of the ToRs.
- Creation of templates to determine which Nodes have datasets available they would like to be analysed, what expertise they would require and what expertise that a Node currently has as this will help groups to identify potential collaborations.
- Creation of templates for the collaborative projects to define their milestones and provide updates on these milestones every 6 months.
- Review and monitoring of research activities within the network and also encourage new collaborative projects.
- Possibly integrate with the publications working group proposed during the GA conference call in April.
- Create workflow diagrams for the identified workflows and also identify other types of workflows to summarise diagrammatically for the H3ABioNet website.

H3ABioNet

- **User Support**

User Support

User Support Working Group (USWG) Annual Report	
Name of Chair (Node Name)	Judit Kumuthini (CPGR)
Name of Co-Chair (Node Name)	Jonathan Kayondo (UVRI)
Reporting Period	June 1st, 2013 to May 31st, 2014
Number of meetings held	12
Number of Nodes part of this working group	9
Number of members part of this working group	18
Report compiled by	Jonathan Kayondo, Judit Kumuthini and Sumir Panji

Summary of goals accomplished for the reporting period June 1st, 2013 to May 31st, 2014:

The USWG was created to enable H3ABioNet to channel technical advice to service partner nodes and H3Africa project bioinformatics needs. Towards this, the following were accomplished in this reporting period:

- Renewing the ToRs and milestones for the reporting period
- Co-opting of additional reps for the Bioinformatics Help desk
- Continual auditing of the H3ABioNet helpdesk (see table below for reporting period summary statistics)

Category	Tickets	Time (min)	Average Time (min)	% of Tickets	% of Time
Analysis - Genotyping arrays	2	68	34	3.1	1.3
Analysis - NGS data	10	3,860	386	15.6	74.1
Analysis - Other	2	360	180	3.1	6.9
General Project Administration	16	131	8	25.0	2.5
NetCapDB	1	5	5	1.6	0.1
Other	6	33	6	9.4	0.6
Software Development / Programming	2	45	23	3.1	0.9
Software license request	2	180	90	3.1	3.5
Technical / System Administration	15	380	25	23.4	7.3
Website / Mailing List	8	145	18	12.5	2.8
Total	**64**	**5,207**	**81**		

Table 1: Summary of H3ABioNet helpdesk metrics from the period of 30th May, 2013 to 20th May 2014.

- Increased focus on marketing, communication and outreach activities in order to promote H3ABioNet and its activities.
- Increased promotion of H3ABioNet to the H3Africa projects, as per SAB recommendation, through set up of project ambassadors.
- Making the H3ABioNet helpdesk publically available to non-registered users and non H3Afica projects: http://www.h3abionet.org/support/help-desk.

- User Support

User Support

- Updating of the H3ABioNet helpdesk webpages with new documentation on how to use the helpdesk: http://www.h3abionet.org/support.
- Creation of a mailing list for the H3ABioNet helpdesk reps to facilitate communication between the reps.
- Creation of the webpages for the H3ABioNet helpdesk reps and their areas of expertise: http://www.h3abionet.org/support/helpdesk-reps.
- Continuation with periodic meetings via remote conferencing, newsletter contributions and submission of progress reports.
- The website has been given a significant facelift: www.h3abionet.org.
- Collection and compilation of the responding Nodes' bio profiles: http://www.h3abionet.org/home/consortium.
- All the work group documents and minutes are made available online via H3ABioNet website http://www.h3abionet.org/uswg.
- Delivering various talks at local institutes and international conferences to increase effective outreach activities.
- Hosted exhibition booths and created brochures for the various H3Africa meetings and a poster for UCT's Africa Week.
- Created and submitted abstract for a poster presentation at the 4th H3Africa meeting at Spier.

Summary of highlights / achievements of the working group for the reporting period June 1st, 2013 to May 31st, 2014:
- Compilation of Nodes' bio profiles of the webpages.
- Updating of the website content.
- Making the H3ABioNet helpdesk publically available and to non H3Africa projects.
- Creation of webpages for skills and expertise of the H3ABioNet helpdesk.
- Increased usage of the H3ABioNet helpdesk.
- Appointment of Ambassadors for the H3Africa projects.
- Securing of license agreements for Ingenuity Pathway Analysis.
- Contribution of USWG summaries for the monthly H3ABioNet bulletin.

Summary of goals not accomplished and any challenges faced by the working group for the reporting period June 1st, 2013 to May 31st, 2014:
Although still on track some Yr2 deliverables such as finalization for guidelines and SOPs for data management, training monitoring tools, and licensing agreements are yet to be wrapped up. This is mainly because they cross-cut and so require more time than had previously anticipated. Also, needs of target groups, especially H3Africa projects are yet to be defined, though this will become less of a factor when the new ambassador scheme becomes fully operational. Adjustments have also had to be made as we progressed such as previously fortnightly working group meetings now rescheduled for monthly. Explorations into BioMart data sharing and storage are also dependent on the data and specifications that the H3Africa projects would like to have integrated which is difficult to obtain. Lastly some meetings have had poor attendance by the working group members.

User Support

- **User Support**

Summary of upcoming goals the working group will be working on from June 1st, 2014 to May 31st, 2015:

- The USWG plans to first focus on finalizing outstanding year 2 goals reported above (e.g. SOPs and guidelines for data management, software licensing etc).
- The drafting of new milestones and updating the ToRs for this working group will be done.
- We want to also get the ambassador scheme fully operational and defined.
- We will continue to recruit expertise for the H3ABioNet helpdesk and update the members' and reps' bio profiles and expertise in areas where there is a scarcity in expertise.
- A systematic review of the H3ABioNet helpdesk will be conducted and key recommendations implemented.
- Marketing materials in the form of brochures and a poster will be created.
- Constant updating of the H3ABioNet website.
- Attempt to mirror the BioQ (http://bioq.saclab.net/) web resources locally.
- Work with the other H3ABioNet working groups on shared milestones and provide support where possible.

Node Accreditation

- **Node Accreditation**

Node Accreditation Task Force (NATF)	
Name of Chair (Node Name)	Victor Jongeneel
Name of Co-Chair (Node Name)	Ahmed Alzohairy
Reporting Period	June 1st, 2013 to May 31st, 2014
Number of meetings held	10
Number of Nodes part of this working group	7
Number of members part of this working group	12
Report Compiled by	Victor Jongeneel and Sumir Panji

Summary of goals accomplished for the reporting period June 1st, 2013 to May 31st, 2014:

The Node Accreditation Task Force has been working on developing SOPs, datasets and evaluation procedures to assess the nodes' capacity to analyse data types that are likely to be produced by the H3Africa projects. The analyses that the NATF has been focussed upon have been variant calling from NGS and genome wide association testing. To date, the following milestones have been achieved:

- Establishment and definition of the scope of the assessment parameters.
- Formation of an external board of experts to review the assessment procedures and results.
- Development of synthetic NGS exome datasets for the variant calling assessment.
- Development and completion of SOPs and documentation for the NGS variant calling assessment.
- Development of synthetic datasets for the genotyping and GWAS testing assessment.
- Development and completion of the SOPs and documentation for the genotyping and GWAS testing assessment.
- Hosting of these datasets on an ftp server for nodes interested in applying for the accreditation exercise.
- Documenting the process and procedures for conducting the assessment exercise.
- The NGS and GWAS SOPs and practise datasets are available on the H3ABioNet website.
- Investigating the feasibility of new types of analyses on which the nodes could be evaluated.

Summary of highlights / achievements of the working group for the reporting period June 1st, 2013 to May 31st, 2014:

- The creation of synthetic datasets for the NGS variant calling and GWAS assessments.
- The creation of the SOPs and documentation for the NGS and GWAS assessments.
- The University of the Witwatersrand undertaking the genotyping and GWAS accreditation assessment.

Node Accreditation

Summary of goals <u>not</u> accomplished and any challenges faced by the working group for the reporting period June 1st, 2013 to May 31st, 2014:
All the goals of the NATF have been met during this period and are currently on track after some initial teething delays. A challenge has been the small number Nodes that participate in this working group and the attendance of some of the Node representatives. However, recent progress has been made in this regard.

Summary of upcoming goals the working group will be working on from June 1st, 2014 to May 31st, 2015:
During the 2013 H3ABioNet AGM, some nodes expressed an interest in being offered other types of accreditation exercises that might be more accessible to their current expertise and resources. A survey was conducted at the NATF meeting during the AGM and a preliminary list compiled. The SOPs and accreditation exercises that will be developed in priority will be microbiome 16S diversity analysis, as some of the H3Africa projects have a major microbiome component. Other SOPs and accreditation exercises will be on RNA-Seq, genome assembly and genome annotation, which we hope to have completed for the next reporting period.

- **Node Accreditation**

- **H3ABioNet / CUBRe Posgraduate workshop 2014**

H3ABioNet-CUBRe Posgtraduate workshop 2014

H3ABioNet together with the Covenant University Bioinformatics Research (CUBRe) Node have successfully hosted the 5 week 2014 postgraduate workshop in Ota, Nigeria from the 21st April to the 26th of May, 2014. The workshop did have a host of challenges which the LOCUM from CUBRe with support from the NABDA Node in Abuja managed to overcome admirably by working together. The five week workshop was aimed at students from H3ABioNet who are registered for a postgraduate degree programme which has a significant bioinformatics component. The H3ABioNet-CUBRe postgraduate 2014 workshop covered topics from introductory linux and python programming, bioinformatics resources, biostatistics and R, NGS and GWAS analyses as well as creation of databases and data mining. Promisingly for H3ABioNet, most of the modules apart from the NGS were taught by African based trainers from Nigeria, Tunisia and South Africa. The H3ABioNet-CUBRe postgraduate 2014 workshop will help the trainees in their relevant areas of human health and hereditary projects, with the peculiarities of being Africans brought to bear on ways H3Africa challenges are addressed. The H3ABioNet-CUBRe postgraduate 2014 workshop also provided an opportunity for the students from different regions in Africa to get to meet and work with one another and form collaborative networks. The H3ABioNet-CUBRe postgraduate 2014 also encouraged the students to develop collaborative research project proposals for review and for the students to continue working on when they get back to their home Institutions. The two projects that have been settled upon are "Analysis of genetic variation associated with Uterine fibroid susceptibility among Africans" and "Workflow for structural and functional analysis of a hypothetical protein (with reference to crop genomes)".

The H3ABioNet-CUBRe postgraduate 2014 workshop was also unique in the way one of the training modules was delivered due to unforeseen complications in obtaining a Nigerian visa. The module Introduction to bioinformatics and proteomics resources was successfully taught live from a venue at the University of the Witwatersrand Bioinformatics Unit using the Vidyo system from the NABDA node. The advantage of teaching using the Vidyo system is it is interactive unlike pre-recorded or live internet streaming services so students can interrupt the lecturer to get feedback on something they do not understand.

The H3ABioNet-CUBRe postgraduate 2014 workshop materials and trainer profiles are available from: http://training.h3abionet.org/postgraduate_workshop_2014/

- **H3ABioNet / CUBRe Posgraduate workshop 2014**

Group picture of the students and trainers of the H3ABioNet-CUBRe postgraduate 2014 workshop.

Dr. Jean-Baka discussing distributions and statistics

Shaun Aron providing live lectures from the University of the Witwatersrand to the H3ABioNet students in Ota, Nigeria.

Takafumi Yamaguchi from the Ontario Institute for Cancer Research (OICR) helping a student troubleshoot during the NGS section of the workshop.

- **NMIMR-H3ABioNet Introduction to Bioinformatics workshop**

NMIMR - H3ABioNet Introduction to Bioinformatics workshop 2014

My initial application to join the H3AfricaBioNet Consortium noted that a sizeable number of staff in Noguchi Memorial Institute for Medical Research (NMIMR), had snippets of knowledge of Bioinformatics but none was a qualified Bioinformatician. Simultaneously, many staff and students were not even aware of Bioinformatics and the benefits this tool offered in medical and scientific research.

At the NMIMR node of the H3ABioNet Consortium, our major motivation therefore is to train interested and committed staff in Bioinformatics and Computational Biology to be able to design and perform genomic-based research and support the analysis of NIH and Wellcome Trust Funded H3Africa projects, two of which are already based in Ghana. Furthermore, the first workshop was expected to prepare the participants adequately to enrol in the impending Intermediate and Advanced workshops slated for later within Year 2 in order to have most of the same set of people go through the full cycle of training.

The first of three planned workshops took off successfully in Accra, Ghana, organized by the NMIMR Node. The theme for the workshops is *"Developing Computational Bioscience Capacity to Augment Biomedical Research"* and the first workshop was titled *"Introduction to Bioinformatics"* was held between the 24th to the 28th of March, 2014. Participants were drawn from a very diverse background including Biologists and Biochemists, Medical Doctors, Forensic Scientists and Biostatisticians. The initial number of applications to attend the workshop were 87 with only 36 being accepted to participate. The NMIMR – H3ABioNet Workshop Topics covered were: Introductory Molecular Genetics, Introduction to Bioinformatics and Biological Databases, Introduction to Biological Text Mining, Reference Management with Zotero and Mendeley Computing for Biomedical Scientists 1

Each session involved a lecture and hands-on demonstration. Freely available programmes, data and scientific papers from public databases, free software and scientific literature were used.

The administration of NMIMR has undertaken to further expand the physical space and fortify access systems to the Bioinformatics Centre ahead of the delivery of a high computational server. It is also to allow for the individual desktops to be more spread out spatially.

Once these are completed, the centre will have specific opening hours during which staff, especially those who participated in the Introductory Course and the subsequent ones will have the opportunity to have hands-on practice on taught modules whenever their time permits.

Dr. James Brandful

NMIMR - H3ABioNet Introduction to Bioinformatics workshop 2014

- **NMIMR-H3ABioNet Introduction to Bioinformatics workshop**
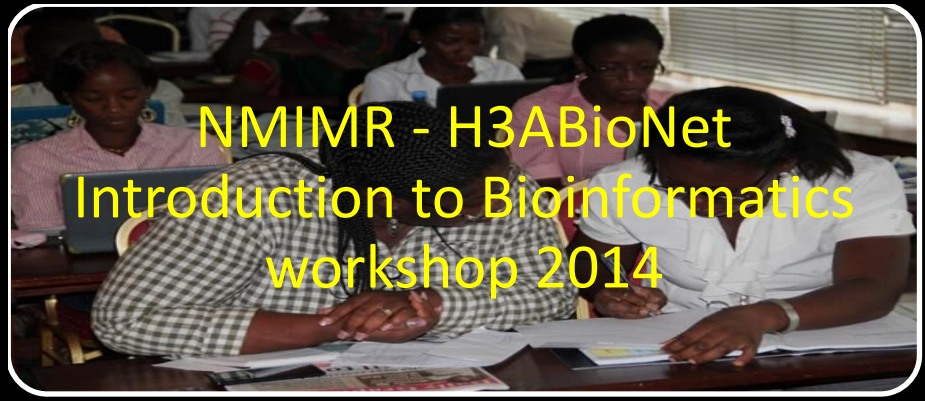
NMIMR –H3ABioNet workshop facilitators. From left to right: Mr. Setor Amuzu, Dr Samuel Kwofie, Dr Anita Ghansah (Co-PI), Dr James Brandful (PI), Wisdom Akurugu.


Group photo of participants and facilitators from the NMIMR-H3ABioNet Introduction to Bioinformatics workshop.

An NMIMR-H3ABioNet workshop participant learning about bioinformatics resources.

Introduction to Genome-wide Association Studies (GWAS) Course - University of the Witwatersrand (Sydney Brenner Institute for Molecular Bioscience/Wits Bioinformatics)

- **Introduction to Genome-wide Association Studies (GWAS) Course - University of the Witwatersrand (Sydney Brenner Institute for Molecular Bioscience/Wits Bioinformatics)**
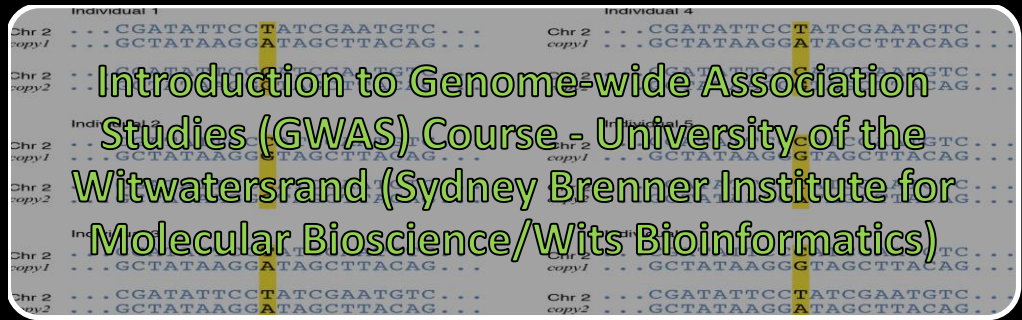
To address the essential need for training and capacity development in the area of genome-wide association studies, the University of the Witwatersrand, under the Sydney Brenner Institute for Molecular Bioscience and Wits Bioinformatics presented a short course on an Introduction to Genome-wide Association Studies. The course was presented by the members of the Wits Bioinformatics team and was open to the broader Wits bioinformatics community as well as members of the H3Africa AWI-Gen project and H3ABioNet.

There was an overwhelming response to the call for the course, however, for practical reasons a total of 28 participants were accepted. In addition to local participants, participants from Sudan, Malawi, Botswana, Tanzania and Ghana attended the course. Five H3ABioNet participants were supported to attend the course by H3ABioNet travel fellowships, while the three AWI-Gen participants were supported by AWI-Gen travel fellowships. The AWI-Gen participants represented the Navrongo Health and Demographic Surveillance System (HDSS) centre in Ghana and the Dikgale HDSS centre in South Africa.

The course was run from the 14th April 2014 - 17th April 2014 at the School of Public Health at the University of the Witwatersrand. The course introduced participants to the key concepts required to perform a GWAS study as well as provided hands on experience in conducting a GWAS data analysis from beginning to end using some of the commonly used tools. Some of the topics addressed included, an introduction to Linux, an introduction to GWAS and designing a GWAS, data quality control and association testing. Complex issues such as addressing population structure and downstream post-GWAS analysis were also covered. The course was well received with a number of positive comments received from participants. Based on the initial overwhelming response to the course, Wits Bioinformatics is planning on running an updated version of the course again next year.

Group photo of participants from the Wits Bioinformatics Introduction to GWAS.

Shaun Aron.

- Announcements

Announcements

- **Congratulations to the Research Unit in Bioinformatics (RUBi) at Rhodes University for their recent publication in Briefings in Bioinformatics "How to establish a bioinformatics postgraduate degree programme-a case study from South Africa." (PMID:24794523)**

- **Congratulations to Dr. Özlem Tastan Bishop from RUBi who is the Editor of a new book called: "Bioinformatics and Data Analysis in Microbiology",** *Horizon/Caister Press* **(April 2014) ISBN: 978-1-908230-39-3.** http://www.horizonpress.com/bioinformatics.

- **Congratulations to the members of the Covenant University Bioinformatics Research (CUBRe) and the National Biotechnology Development Agency (NABDA) Nodes for their recent publication in PLoS Computational Biology:Computational biology and bioinformatics in Nigeria (PMID:24763310)**

- **The EMBO Global Exchange Lecture Course High-throughput next generation sequencing applied to infectious diseases will take place from 15 – 25 September 2014 Tunis, Tunisia (**http://events.embo.org/14-ht-ngs/**).**

- **The Noguchi Memorial Institute for Medical Research (NMIMR) Node of the H3ABioNet Consortium will hold an H3ABioNet funded Intermediate Bioinformatics Workshop from 23rd to 27th June, 2014 at the NMIMR Conference Room, Legon Accra, Ghana. This will complement the very successful Introduction to Bioinformatics Workshop held in March, 2014.**

- **The NABDA Node will be hosting a Metagenomics Data Analytics Workshop at Ibadan, Nigeria between the 21st to the 25th of July, 2014 (**http://www.h3abionet.org/training-and-education/h3abionet-courses/17-h3abionet-courses/h3abionet-courses-upcoming/176-h3abionet-nabda-metagenomics-data-analytics-workshop-july-21-25-2014-ibadan-nigeria**).**

- **The second course on Biological and Genomics Data Mining 'Biomining2014' organized by H3A Bioinformatics Network –Morocco with the participation of the Moroccan Classification Society and the Biotechnologies Laboratory of Mohammed V university-Rabat, will be held in Rabat from the 8th to 9th September 2014 (**http://biom14.conferences-it.com/index.html**).**

• Announcements

Announcements

- The Egyptian Center for Bioinformatics and Genomics (ECBAG) have recently opened an interactive bioinformatics training room with the interactive projector being partly funded by H3ABioNet, a picture is presented below.

- The ECBAG also organised and held a 1 day "Introduction to Bioinformatics" workshop at Tanta University on the 15th of May, 2014.

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- Important Dates

Important Dates

- **30 May – 2 June: 4th H3Africa Consortium Meeting** http://h3africa.org/9-news/140-registration-fourth-consortium-meeting

- **30th May: H3A Cardiovascular meeting** http://www.h3africa.org/9-news/125-fourth-h3africa-consortium-meeting

- **2nd June: H3A Genome Analysis Symposium** http://www.h3africa.org/9-news/125-fourth-h3africa-consortium-meeting

- **3rd – 6th June: H3ABioNet Data management workshop** http://www.h3abionet.org/training-and-education/h3abionet-courses/17-h3abionet-courses/h3abionet-courses-upcoming/130-h3abionet-data-management-workshop-june-3-6-2014

- **7th June: Deadline for applications to the EMBO Global Exchange Lecture Course High-throughput next generation sequencing applied to infectious diseases (**http://events.embo.org/14-ht-ngs/application.html **).**

- **11th June: Deadline for applications to the Noguchi Memorial Institute for Medical Research (NMIMR) H3ABioNet Intermediate workshop**

- **15th June: Deadline for applications to the H3ABioNet NABDA Metagenomics Data Analytics Workshop**

- **Upcoming H3ABioNet Working group meetings**

H3ABioNet Working Group Meeting Schedule until July 2014

Working Group	Time	Date and Month	
E&TWG	UTC = 11am	10	June
E&TWG	UTC = 11am	24	June
E&TWG	UTC = 11am	8	July
E&TWG	UTC = 11am	22	July
USWG	UTC = 9am	13	June
USWG	UTC = 9am	11	July
RSWG	UTC = 9am	20	June
RSWG	UTC = 9am	18	July
RSWG	UTC = 9am	15	August
ISWG	UTC = 1pm	4	July
NAWG	UTC = 1pm	25	July

Summary of H3ABioNet upcoming working group meetings

E&T WG	Education and training working group
USWG	User support working group
RSWG	Research working group
ISWG	Infrastructure working group
NAWG	Node accreditation working group

Acronyms used for the various H3ABioNet working groups

UTC Time Offset	Time Zone Name	Regions / Countries in the Timezone offset
-5 hours (-6 hours)	CDT	Chicago, USA (2nd November, 2014)
-4 hours (-5 hours)	EDT	Boston, USA (2nd November, 2014)
0 hours	GMT	Burkina Faso, Ghana, Mali, Morocco, Senegal
+1 hour	WAT	Cameroon, Chad, Gabon, Namibia, Nigeria, Niger, Tunisia
+2 hours	CAT	Botswana, Egypt, Malawi, South Africa, Sudan, Zambia
+3 hours	EAT	Ethiopia, Kenya, Tanzania, Uganda

Time zone conversion table to UTC for all of H3ABioNet working group meetings