



Foreword



Welcome to the first newsletter for 2016, and indeed the first after a long silence. The team has been extremely busy with H3ABioNet deliverables, and the newsletter was put on hold for a few months. To catch up, this newsletter reports on our activities between June and December 2015 and the next one will cover activities from January 2016 to date.

As usual, the Education and Training working group has been busy and several workshops were organized either directly by H3ABioNet or with support provided by the network. The highlight was the train-the-trainer and Best Practices in Bioinformatics Training workshop held in November 2015. This was an event organized by H3ABioNet and the Global Organisation for Bioinformatics Learning, Education and Training (GOBLET), and is reported on in this issue.

The Infrastructure working group and its task forces have been active, especially in getting Netmap and Globus Online up and running in all our nodes. Much progress has been made on these. A new task force has been established from this working group to enable H3ABioNet to embrace Cloud computing. You will also see reports from our Research and User Support working groups in this bulletin, providing an update on their activities. H3ABioNet central has continued to work on a number of projects, including custom chip design, testing the H3Africa archive with real data, and the participant recruitment database.

One of the major events over this period was our annual face to face Scientific Advisory Board and General Assembly meeting. This took place in Cape Town over 4 days in November. This always provides an excellent opportunity to hear reports on node and working group activities, to brainstorm new ideas and to get valuable feedback from our SAB. This time we introduced one on one sessions for nodes with the SAB, which both parties found to be valuable.

I invite you now to continue reading to find out more about our working group activities and reports on training courses and meetings provided in this newsletter.

Prof. Nicky Mulder

- **Foreword**
- **Education and Training**
- **Infrastructure**
- **Research**
- **User Support**
- **H3ABioNet SAB Meeting 2015**
- **GOBLET Bioinformatics training best practices workshop, November 2015**
- **Announcements**
- **Upcoming Events**
- **Upcoming H3ABioNet Working group meeting schedule**



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- **Education and Training**

The Education and Training (E&T) working group has continued with the aim to develop capacity in Bioinformatics across the range of H3Africa projects through a number of avenues. The first is direct training through the development and hosting of formal training workshops. Over the second half of year 4, we have been involved in developing and assisting with a number of workshops covering a range of topics, some of which were not directly funded by H3ABioNet, but organizational support was provided.

An Introduction to Bioinformatics Analysis Techniques for NGS sequencing data workshop was presented at the Uganda Virus Research Institute (UVRI) in July 2015. The E&T working group provided input in the planning and organizing of the workshop, which covered the practical analysis of NGS data. A GWAS workshop for complex diseases was presented at Covenant University in Nigeria in June 2015. The workshop was presented via an online platform by H3ABioNet trainers from the University of the Witwatersrand in South Africa. Following the completion of the course, the group at Covenant University went on to successfully complete the GWAS node accreditation exercise.

H3ABioNet teamed up with the Global Organisation for Bioinformatics Learning Education and Training (GOBLET) to run a train-the-trainer/best practices workshop for bioinformatics trainers in November 2015, following the H3ABioNet consortium meeting in Cape Town. The workshop was attended by 40 bioinformatics trainers and trainees from 24 countries. A full report on the workshop is featured in this newsletter.

In addition to training workshops, the H3ABioNet internship program has been used to provide more direct hands on training. Hermina de Wit and Philip Mgambo, from Rhodes University were placed at the University of Cape Town under the supervision of Prof. Nicola Mulder during the month of August 2015. Ms. De Wit worked on the 18s rRNA metagenomics analysis to assess the biodiversity of *Arbuscular mycorrhizal* fungi and Mr. Mgambo worked on candidate gene association and GWAS with the group in order to enable him to analyse his data for the H3Africa Trypanogen project. During his internship at UCT, Phillip became involved in the NGS node accreditation exercise, which this node completed successfully. This served as a capacity building exercise, in addition to achieving accreditation.

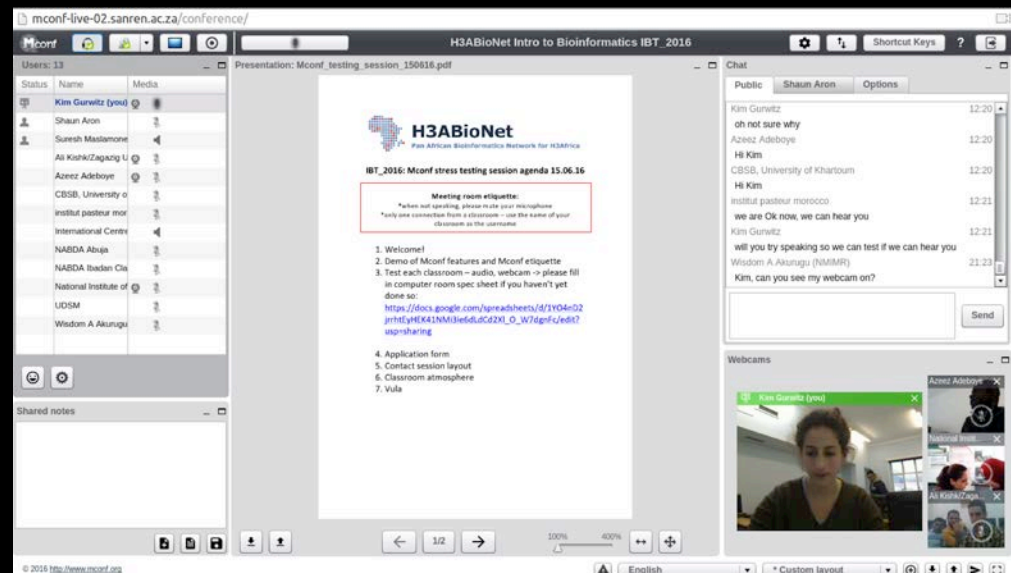


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• Education and Training

A major project that the E&T working group has been working on is the development and implementation of an online Introduction to Bioinformatics course. Initially, we had hoped to be able to plan and run the course by the beginning of 2016, however, the planning and logistics have been challenging to resolve. We are happy to announce that the course will start in July 2016.

Briefly, the course aims to provide an introduction to the field of Bioinformatics, with a focus on important Bioinformatic tools, algorithms and resources. Classrooms have been set up at various H3ABioNet sites and will link to the trainer via the Mconf conferencing system. Trainers will teach the course from their home institutes via Mconf and there will be appropriately trained local teaching assistants at each of the sites to assist with the practical components of the course. We will have a further update of the course, with more details, in the next newsletter.



Screenshot from an Mconf stress-testing session (on 15 June) during which classrooms tested their connection to the conferencing platform and their audio-visual setup for the course. The course will run from 6 July to 9 October 2016.



• Infrastructure

The main activities of the Infrastructure working group (ISWG) for the period June-December 2015 were:

1. Roll out of the Netmap and Globus Online end points continued. This is a key milestone of the ISWG, and the nodes. The ability to transfer large data sets between H3ABioNet sites in Africa, and also with our partners elsewhere, is key. The Netmap project allows us to monitor network performance and also map how infrastructure grows and improves. It also gives nodes the ability to monitor their own progress and lobby for additional resources. Globus Online endpoints provide a user-friendly way of transferring very large data sets efficiently, using the gridftp protocol. We have already started to use these for production and their availability will be essential for sites wanting to collaborate using large data sets. Approximately half the H3ABioNet sites now have Netmap and Globus Online endpoints installed. We also have an automated monitoring service that checks daily that the infrastructure is working.
2. H3A Participants Recruitment Database. The H3A funders, the NIH and the Wellcome Trust, approached H3ABioNet to ask us to build an interactive database and reporting system that would allow the H3A projects and the funders to monitor progress of recruitment of the projects. A task team was established to design and build the system, and by the end of the year a prototype system had been built (more on progress next month!).
3. The Systems Administration Task Force has not been as busy as in the past, as earlier on in the project it was very involved in setting up the infrastructure and training. Nevertheless, it continues to do important work in the developing and maintaining of documentation and standard operating procedures (SOPs). There is also ongoing work with our Swedish collaborators at SLU on updating and extending the use of eBiokits.
4. The Data Management Task Force is responsible for some of the most mission critical work of H3ABioNet. Work on building the Data Archive for H3Africa continued. We also are refining procedures for H3A groups to submit data and we started work on the first real data submission that we received. In June 2015, we ran a well attended data management workshop, with support for our various collaborators. Some good progress was made on the data archive in this period. Sadly, we had to bid farewell to Danny Mugutso, our Data Systems Manager. As many of our other members have significant responsibility in other projects, particularly with the African Custom Chip Design project, progress slowed toward the end of the year.
5. At the GA meeting in November, it was agreed that we needed to put more attention into computing infrastructure, and particularly cloud computing. A Cloud Computing Task Force was established at that meeting.



Infrastructure

• Infrastructure

Significant progress was made in the period on our milestones, though we have limited participation in our meetings and we need much more participation. We are particularly reliant on the sterling work done by our colleagues at CBIO. I would like to acknowledge the contribution of the University of Illinois node to our work. Mohamed Alibi, from the IPT node, has moved to the EBI and so stepped down as co-chair of the ISWG. Mohamed is full of energy and made a big impact in the group, so we were very sorry to lose him though he continues to help in the background. Suresh Maslamoney has taken over as co-chair, and his experience and hard work make him a very able leader in the group.



Participants of the Technical Sys Admin 2015 workshop

Suresh Maslamoney

Scott Hazelhurst



- **Research**



The Research working group (RSWG) launched a Bioinformatics webinar series and a dedicated task force is working on the webinars organization. The webinars are organized on a monthly basis and covered a wide range of Bioinformatics topics.

In order to foster collaborations between scientists that have different backgrounds and to encourage the Open Science, a Mozilla study group has been launched in Tunis and is being led by Amel Ghouila. During each meeting, a group member presents a Bioinformatics tool.

The RSWG also launched SIGs and created dedicated forums dedicated to each SIG at the H3ABioNet website. Depending on their active interactions and discussions in their assigned forums, two special interest groups (SIGs) [High throughput sequencing technologies (HTSeq) and Health Informatics (HI)] were selected to present during a SIG round table discussions at the H3ABioNet AGM in November 2015.

Amel Ghouila

Faisal Fadlelmola



User Support

• User Support

The User Support working group (USWG) continued in its efforts to consolidate the H3ABioNet Help desk as a resource to service partner nodes and H3Africa studies in Bioinformatics during this period. The milestones for the year 2015/16 were realigned in view with the discussion at the Annual consortium general meeting on strategies to reach out to H3Africa projects and the Pan-African research community.

As part of its role, the USWG is responsible for conducting frequent audits of the H3ABioNet helpdesk, in terms of subject categories, and collecting metrics such as: time taken to assign a user request ticket to an expert; time taken for the expert to provide support; and time taken for the successful resolution of a ticket, in order to monitor and evaluate the quality and efficiency of the H3ABioNet helpdesk. Updated statistics for the helpdesk are provided biannually. Towards this, a review assignment of Help-desk subject categories and select online standard operation procedures (SOPs) refinements was performed. Selected members of the USWG reviewed the Help desk categories and found them sufficient as they stood and it was recommended to add a Category for JMS to our Help desk. The USWG also undertook detailed microscopic examination of the existing SOPs for the various themes of bioinformatics data analysis (GWAS, Variant calling, 16S RNA diversity etc.). The aim was to make the SOPs clearer and easy to follow or use, taking cognizance of the fact that the majority of African biomedical/ clinical researchers are novices in bioinformatics. In all, the SOPs were fine except for a few broken links and texts in the variant calling, and there was a recommendation to add a meta analysis section to the GWAS SOP. The USWG reviewed the H3ABioNet website and analysed the traffic flow at the website using the Google analytic metrics, an example of which is presented in Fig. 1. Among the recommendations were to update the frequently asked question (FAQ) section of the website and to also appoint a dedicated expert for the website to monitor and improve the 'user-friendliness' of the website.

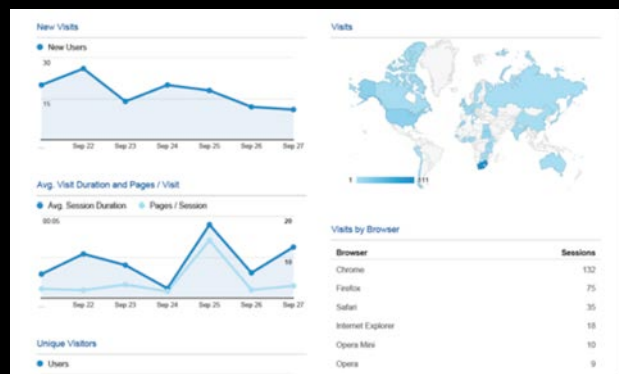


Fig1. Sample H3ABioNet Website google analytics metrics for 4th week of September 2015



4th H3ABioNet SAB Meeting 2015

The H3ABioNet Scientific Advisory Board (SAB) and annual general meeting took place in Cape Town, South Africa between the 10th and 13th of November 2015 with 23 of the 31 H3ABioNet nodes represented. A full meeting agenda and material for the meeting can be accessed at: <http://www.h3abionet.org/members/meetings>

The meeting started with a welcoming address by Prof. Nicola Mulder on the 10th of November followed by presentations, from each Node representative present, summarising the Node's activities for year 3. Various H3ABioNet PIs provided an update on the H3Africa working group activities that they were part of in order to keep the network better informed on H3Africa activities. The last session of the day centred on discussions by two H3ABioNet special interest groups (SIGs) coordinated by the H3ABioNet Research Working Group. The first SIG focused on a health informatics themed discussion, which centred on a report compiled with the title "Integrating health informatics and genomics best practice in African contexts: Challenges and implications". This report was prepared by Prof. Scott Hazelhurst and Dr. Shakuntala Baichoo, led by Prof. Hazelhurst. The second SIG group discussion was based on a concept note drafted by Azza Ahmed entitled "The challenges of the application of H3Africa chip reference panel to other African populations not well represented on the chip".

The second day of the 2015 H3ABioNet SAB / AGM was devoted to discussing H3ABioNet working group activities, which were reported on by the working group Chairs. The upcoming activities and draft milestones for year 4 were presented for discussion by meeting attendees. The Infrastructure working group (ISWG) reported on working to get NetMap and Globus Online installed at the various Nodes. Upcoming activities for the year include creating a draft manuscript for the NetMap and Globus Online work, which was conducted with a view to publish the results. Cloud computing has become a mainstream topic and some of the activities for the ISWG in year 4 will focus on assessing cloud computing. The Research working group (RSWG) presented their experiences with the running of the H3ABioNet seminar series and also the formation of the SIGs. The upcoming focus of the RSWG will be to continue the seminar series and to establish a new committee to assist in writing and reviewing research proposals. Assistance given will be informed by the experience with the collaborative grant proposal for Uterine fibroids submitted to the Wellcome Trust by H3ABioNet students. The RSWG will look at how to merge with other SIGs present in order to facilitate better participation and discussions for a wider audience, not limited to H3ABioNet. The Education and Training working group (E&T WG) focused on planning workshops for the upcoming year and discussed the Introduction to Bioinformatics course curriculum that will be held in 2016. The E&T WG reviewed the University of Malawi College of Medicine Bioinformatics MSc Curriculum proposal that was presented by Dr. Chisomo Msefula. Feedback was provided on the curriculum by H3ABioNet members and two SAB members (Prof. David Roos and Prof. Jessica Kissinger) within this session. The User Support working group (USWG) provided feedback on the Ambassador scheme and upcoming activities for year 4, which planned to be more outreach focused in order to attract new members.

- **H3ABioNet SAB Meeting 2015**



- **H3ABioNet SAB Meeting 2015**

The USWG highlighted a recurrent theme echoed by all the working groups, which is the lack of active participation by various Nodes and their members within the consortium during working group meetings.

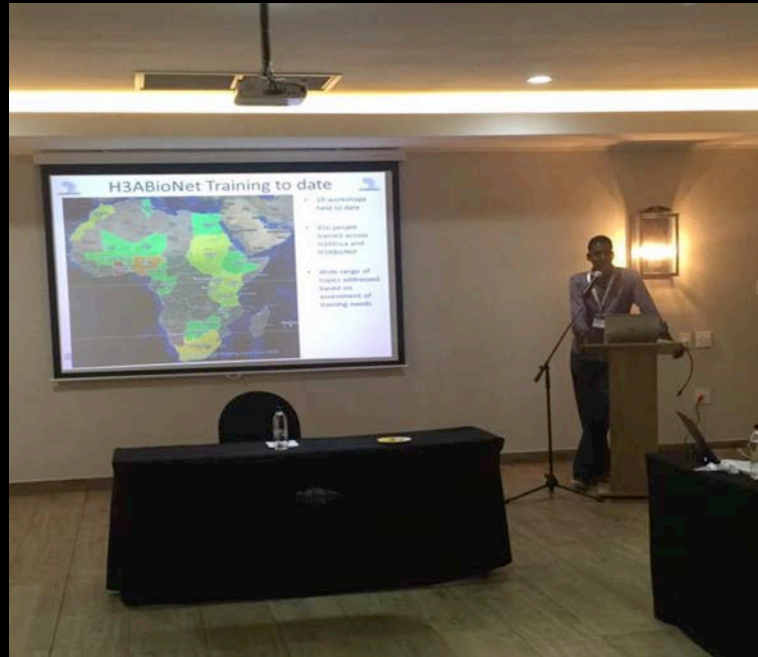
The 13th of November was dedicated to providing an overview of the H3ABioNet activities to the SAB members present (Prof. David Roos, Prof Jessica Kissinger, Prof. Francis Ouellette and an honorary SAB observer, Prof Gerard Tromp). Prof. Mulder provided a summary of the year 3 H3ABioNet activities to the SAB and selected Node highlights from the Node reports on the 10th of November were compiled and presented to the SAB by Azza Ahmed. The Co-Chairs of the working groups (Shaun Aron for the E&T WG, Amel Ghouila for the RSWG, Suresh Maslamoney for the ISWG and Pandam Salifu for the USWG) provided an update of the year 3 activities and the upcoming year 4 focus of their working groups. The afternoon session focused on selected ongoing research projects within the H3ABioNet consortium, which include the use of ontologies for annotating the H3Africa data by Dr. Vicky Nembaware, the Human Mutational Analysis webserver by David Brown from the RUBi Node, updates on NetCapDB by Jean-Baka from the SANBI Node, and the progress on the H3Africa African specific genotyping chip design project by Gerrit Botha from the C BIO Node. Zahra Mungloo-Dilmohamad from the University of Mauritius Node presented on progress of the H3Africa Training database (HTrainDB). Danny Mugutso from the C BIO Node and Hocine Bendou from SANBI Node provided updates on the H3Africa Data archive and integration of the H3Africa LIMS to create a searchable catalogue, respectively.

The 2015 H3ABioNet and SAB meeting was intentionally planned to run over four consecutive days with two days devoted to H3ABioNet discussions, one day for the H3ABioNet project report back to the SAB and the last day reserved for one-on-one meetings with the H3ABioNet Node representatives, the SAB members present, the Central's Node's H3ABioNet PI and project manager, and the UCT finance team in order to improve communication, foster more engagement, and answer any questions. This is a marked difference from previous H3ABioNet meetings held over two days that did feel a bit rushed and left little opportunity to foster any dialogues or engagement between Network members. The afternoon session on the 13th of November 2015 comprised talks on potential projects. Prof. Dean Everett from the Malawi-Liverpool Wellcome Trust programme provided a project proposal for an influenza-host genome project that will use African populations and would like H3ABioNet Nodes to help analyse the data, providing that they have undergone a Node accreditation. Prof. Nicola Mulder put forward the proposal of having an African Variation Database project and preliminary talks with the European Variation Archive (EVA) have been positive in terms of sharing code bases and data schemas. Amel Ghouila discussed the anticipated planning of the Dialogues in Reverse Engineering And Methods (DREAM) challenges – the data preparation project held in collaboration with IBM research Africa and the University of Notre Dame. The structure of the grant renewal was discussed with a focus on how H3ABioNet will look in the renewal, although a lot will depend on the NIH's Request for Applications (RFA) for the next H3Africa funding cycle and budget availability. The current H3ABioNet grant was also discussed with the distinction being made that it is a capacity development grant, not a research grant, and that the next RFA will most probably be similar.



H3ABioNet Nodes should start contacting and working with the current H3Africa groups and other research groups within their regions to co-apply for grants and provide the Bioinformatics component where possible in order to gain more research capacity and also ensure their sustainability.

The final session of day four comprised feedback from the SAB. Overall the SAB were impressed with the quality and amount of progress made by the individual Nodes in developing their bioinformatics capacity and also the specific projects since the last meeting in 2014. The SAB also noted that the Network is more cohesive with all Node representatives present contributing to discussions and as a Network, there is more engagement between H3ABioNet members. The SAB were also impressed by the calibre of the H3ABioNet working group Co-Chairs and the initiative they have demonstrated upon assuming their roles and the leadership skills they have gained.



Shaun Aron, Co-Chair of the H3ABioNet E&T WG reporting on the working group's year 3 activities to the H3ABioNet Scientific Advisory Board



Group picture of attendees to the H3ABioNet Scientific Advisory Board meeting held in November 2015 in Cape Town.



GOBLET Bioinformatics best practices workshop, Cape Town, November 2015

H3ABioNet together with the Global Organisation for Bioinformatics Learning, Education and Training (GOBLET) presented a Best Practices/train-the-trainer Bioinformatics Training workshop, following the H3ABioNet Consortium Meeting in Cape Town in November 2015. GOBLET is an established foundation that aims to provide a global, sustainable support and networking structure for bioinformatics trainers and trainees through the development of guidelines and best practices documents and a training portal for sharing materials, tools, tips and techniques (www.mygoblet.org).

The aim of the workshop was to gather a group of bioinformatics trainers from across the world and discuss bioinformatics training. The two-day workshop was attended by 40 participants from 24 countries, with a significant representation from H3ABioNet nodes.



Attendees at the GOBLET Bioinformatics training best practices workshop, Cape Town, November 2015

The first day of the workshop was presented by Sarah Morgan from EMBL-EBI and Gabriella Rustici from the University of Cambridge and was tailored towards new bioinformatics trainers. A hands-on interactive approach was used to explore the concepts regarding different learning styles and how best to assess and consider this when developing a course. Also covered, was the importance of setting clear objectives for learning when developing a new course and considering participant's expectations when deciding on the best format for a course.

- **GOBLET Bioinformatics training best practices workshop, November 2015**



- **GOBLET Bioinformatics training best practices workshop, November 2015**

The first day concluded with an overview of resources for available training material and how best to obtain and evaluate both long-term and short-term impact for a training course.

Day two of the workshop was pitched at experienced bioinformatics trainers with a focus on the challenges faced in bioinformatics training and how best the community of trainers can support each other. Topics included how best to reach larger audiences using distance-based learning approaches and a larger discussion building on talks presented by Cath Brooksbank (EBI), Nicky Mulder (UCT), Celia van Gelder (ELIXIR) and Fran Lewitter (Whitehead), on developing a list of core competencies for the different specialist areas in the bioinformatics arena. A break-out session on core competencies lead to some lively discussions and debates and contributed towards feedback for the development of a set of core competencies for the different bioinformatics specialist areas, being worked on by a taskforce of the International Society of Computational Biology (ISCB). The day concluded with a talk by Pedro Fernandes (GTPB) on the use of a digital badge system to recognise and reward training excellence. Overall it was a valuable and insightful course with something new learnt by both new and seasoned trainers. Thank you to both the trainers and participants who contributed to a successful workshop!



Pedro Fernandes (Gulbenkian Training Programme in Bioinformatics, left) and Terri Atwood (right) presenting on distance based learning models



- **Announcements**

Announcements

Prof. Ahmed Moussa (H3ABioNet PI node of Tangier, Morocco) was named Researcher of the Year 2015 within the Abdelmalek Esssaadi University-Morocco. The prize, awarded in the presence of the Minister Delegate in Charge of Scientific Research, is owed to these efforts and involvement in the development of Bioinformatics skills and capacities at the university, especially the setting up of the Moroccan Centre of Bioinformatics in Tangier in partnership with H3ABioNet Consortium.

The University of Illinois has hosted an intern (Debbie Fasesan from the NABDA Node) for two months during the summer of 2015, working on microbiome data from leg ulcers in sickle cell disease patients.

Congratulations to the University of Illinois group who have been awarded three Administrative Supplements to their BD2K grant: two to develop services and technologies for the NIH Data Commons, and one to provide training opportunities for students from Fisk University in Nashville, a historically black university. One of the Data Commons awards will be used in part to develop a pilot imputation server for H3Africa.

The CPGR node published “Broadband” Bioinformatics Skills Transfer with the Knowledge Transfer Programme (KTP): Educational Model for Upliftment and Sustainable Development.

(<http://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1004512>)

The CPGR Node has hosted 4 online trainings in Ingenuity Pathway Analysis and offered 2 weeks free training licenses to the participants. This node also ran a RNA-Seq Chipster workshop in Cape Town.

Any announcements for the next edition of the newsletter may be send to kim.gurwitz@uct.ac.za AND sumir.panji@uct.ac.za



• Upcoming events

Upcoming events

- July 6th to October 9th 2016; Introduction to Bioinformatics online course – 19 classrooms across 11 African countries will take part in this distance learning course that focuses on important Bioinformatics resources and tools. http://training.h3abionet.org/IBT_2016/
- July 8th to July 12th 2016; The 24th Annual International Conference on *Intelligent Systems for Molecular Biology (ISMB 2016)* hosted by the International Society for Computational Biology (ISCB), Orlando, Florida, USA (<https://www.iscb.org/ismb2016>)
- July 13th to July 15th 2016; e-Health and Telemedicine in Mediterranean Countries, National School Of Public Health, Rabat, Morocco (<https://www.isfteh.org/events/category/www.cscoc>)
- August 22nd to August 26th 2016; H3ABioNet Cloud computing hackathon, University of Pretoria, South Africa (<http://www.h3abionet.org/17-h3abionet-courses/h3abionet-courses-upcoming/266-h3abionet-cloud-computing-hackathon>)
- September 5th to September 10th 2016; H3ABioNet / IBM Research Africa Hackathon on Malaria Drug Resistance for a DREAM challenge, Johannesburg, South Africa (<http://www.h3abionet.org/h3abionet-ibm-research-africa-hackathon-malaria-drug-resistance-2016>) **Applications close on the 11th of July 2016
- November 6th to November 10th 2016; Ninth Annual RECOMB/ISCB Conference on Regulatory & Systems Genomics, with DREAM Challenges & Cytoscape Workshop, Phoenix, Arizona, USA (<https://www.iscb.org/recomb-regsysgen2016>)
- November 21st to November 23rd 2016; The fourth International Society for Computational Biology Latin America Bioinformatics Conference (ISCB-LA), jointly organized with A2B2C, will take place in Buenos Aires, Argentina (<https://www.iscb.org/iscb-latinamerica2016>)
- December 15th to 17th 2016; 8th Cairo International Biomedical Engineering Conference. CIBEC 2016 will feature tutorials, plenary lectures by renowned international speakers, scientific presentations, and exhibits. CIBEC 2016 will also feature a new format of Mixed Mode Symposia, with the goal to bring biomedical engineers/researchers together with medical doctors and clinical researchers

Any upcoming events for the next edition of the newsletter may be send to kim.gurwitz@uct.ac.za AND sumir.panji@uct.ac.za



H3ABioNet Working Group Meeting Schedule until end July 2016

Summary of H3ABioNet upcoming working group meetings:

Working Group	Time	Date	Month (2016)
E&TWG	UTC = 11:00	Tuesday, 26	July
USWG	UTC = 9:00	Friday, 22	July
RSWG	UTC = 11:00	Friday, 8	July
ISWG	UTC = 13:00	Friday, 15	July
Cloud computing task force meeting	UTC = 14:00	Thursday, 14	July
H3ABioNet seminar talks	UTC = 13:00	Thursday, 22	July

Acronyms used for the various H3ABioNet working groups:

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

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

UTC Time Offset	Time Zone Name	Regions / Countries in the Timezone offset
-5 hours	CDT	Chicago, USA
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

This edition of the newsletter was compiled and edited by Kim Gurwitz. For any corrections, please contact Kim at kim.gurwitz@uct.ac.za

- **Upcoming H3ABioNet Working group meeting schedule**