H3ABioNet *Newsletter*
Pan African Bioinformatics Network for H3Africa

Issue 26: November 2018

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FOREWARD

Can you believe we have finished year 1 of the renewal period already! The existing projects from phase 1 have continued as planned and there has been lots of activity getting the new projects underway. The combined Annual General Meeting and Scientific Advisory Board (SAB) Meeting which took place in Cape Town in July was useful for consolidating the project aims and hearing updates on the progress. Our SAB consists of 5 new members and the chair, who was part of the SAB previously. We were very fortunate to have the full board present at the meeting, where they made excellent contributions and gave valuable feedback.

During the period since the last newsletter, many H3ABioNet members also attended the 12th H3Africa consortium meeting in Rwanda where we interacted with the H3Africa grant awardees at dedicated sessions. Some of the H3ABioNet activities were also presented at the annual Intelligent Systems for Molecular Biology conference in Chicago and well received. The newsletter contains a report on the conference.

Also included in the newsletter are reports on other events, including a bioinformatics symposium at the University of Ibadan, Open Science workshops and an exciting event we ran using the mGenAfrica tool for high school learners. We have submitted several articles for publication, some of which are still under review and recently one was accepted. In summary, we are making good progress in achieving our project goals and increasing the output of the consortium.

mGenAfrica Launches at UCT

mGenAfrica is an interactive online platform geared at invigorating interest and excitement around careers in the life sciences among high school learners and places special focus on genomics. The platform is funded by H3ABioNet and is the brain child of Victoria Nembaware (SaDDacc group). It features a range of activities such as live chat sessions with UCT researchers, quizzes, a career corner, competitions as well as a suite of learning material that ranges from videos to fun genomics based online comics.

Dr. Victoria Nembaware said the main aim of mGenAfrica is to educate learners about genomics and genetics and related life sciences. It provides learners with content in a way that is relatable to them. They have the unique opportunity to ask questions to actual researchers, doctors, professors and clinicians during scheduled live chat sessions where researchers freely volunteer their time. The site also provides online, freely available, videos that are aligned to specific topics within the life sciences curriculum in South Africa. Thereby making learning a much more interactive and even fun experience.

When the Western Cape Metro South Education District's (MSED) curriculum advisor, Gabrial Agulhas caught wind of Vicky's activities he soon jumped on board and continued to develop this platform alongside her. He very quickly saw the value in this platform and assisted in piloting the platform in small focus groups of high school learners where the overall impression made by the learners was that it was a worthy pursuit and the general excitement from these learners pushed Vicky and Gabrial to make this platform a reality.

The official launch of this platform was held in tandem with the finals of a life sciences quiz competition and hosted at the University of Cape Town on Saturday 18 August, which saw 39 schools from across the western cape metro south district compete for top accolades (some images from the day's activities can be seen above).

Apart from the more academic activities, learners were entertained by UCT's very own in-house student DJ Tau Setho a.k.a. lion king (pictured above), who had many activities to keep the atmosphere exhilarating while groups were being ushered around for the actual quiz competition. This made the event a unique experience for many learners.

The winner of the individual competition, Jamie-Lee Stemmet (center) from South Peninsula High School, was delighted to scoop the first prize.

"It was an amazing experience. I enjoyed it a lot. I've never experienced something like this before and it was fun. Competitions like this are so important. They build character. I'm very excited to have come first" Jaimie-Lee told UCT media

By: Verena Ras

H3ABioNet at ISMB

The Intelligent Systems for Molecular Biology (ISMB) Conference is the premier event of the International Society for Computation Biology (ISCB). It attracts over 2,000 participants with up to 9 parallel tracks. The conference is now organized as a set of Community of Special Interest (COSI) sessions, grouping talks and posters by topics.

H3ABioNet was represented at the ISMB 2018 conference in Chicago, which ran from the 6-10th July, with talks and posters. Nicky Mulder presented a keynote talk on our ontology work, entitled: "The use of existing and new ontologies in African biomedical research" in the Bio-Ontologies track.

Judit Kumuthini presented a flash talk of her poster on "Minimum Information Required: Guideline for Stroke Research and Clinical Data Reporting" in the same session. Nicky was co-organizer of the Education COSI session, which is the first full day session this COSI has hosted at the ISMB conference. The session received many high quality abstracts and had inspiring talks and a panel session on bioinformatics training and education. Shaun Aron from the Wits node gave an excellent presentation entitled: "Implementation and evaluation of different training modalities in resource limited settings".

There were also posters from Lyndon Zass on "The H3ABioNet Helpdesk: an online bioinformatics resource, enhancing Africa's capacity for genomics research", and from Phelelani Mpangase on "Developing reproducible and portable bioinformatics workflows for African genomics research". Liudmila Mainzer from the University of Illinois node was there presenting 2 posters. This gave me the opportunity to finally meet her in person.

Nicky shows off her smile as she finally meets Liudmila after 6 years!!

H3ABioNet is an official member of GOBLET, the Global Organization for Bioinformatics Learning, Education and Training, and Nicky helped out at the GOBLET stand during the breaks. The stand was very popular with both bioinformatics trainers and trainees (see photo of booth to the right).

ISMB is the premier event in the conference calendar for bioinformatics and computational biology. The talks are world class and cover cutting edge technologies, algorithms and their applications. It offers tutorials and workshops and also provides an excellent opportunity for networking among peers in the field. I highly recommend attendance and presentation at the conference for students. The next ISMB will be held in Basel from the 21-25th July 2019, co-chaired by one of our own ;-)

Conference Co-chairs

Nicola Mulder
University of Cape Town, South Africa

Torsten Schwede
Biozentrum, University of Basel & SIB Swiss Institute of Bioinformatics, Switzerland

BASEL JULY 21–25

ISMB ECCB 2019

iSCB

www.iscb.org/ismbeccb2019

Phelelani Mpangase (top) and Shaun Aron (bottom) show off their posters

By: Nicky Mulder

Open Science

The SO work package gathers a number of projects and activities aiming to disseminate H3ABioNet outputs and activities across and beyond the consortium and coordinate development of plans for long term sustainability.

The Open Science project, led by Amel Ghouila, is one of the projects that has been started during the first phase of H3ABionet. It aims to :

- Raise awareness about the importance of Open Science and its advantages in advancing scientific research based on the different working open pillars (see figure below)
- Disseminate working principles and resources
- Foster the skills sharing culture and collaborative work
- Connect with Open Science international communities

Some activities like the Open Science study groups started during the first round project. The idea of these study groups is to build community of peers committed to learning and teaching each other different skills through lectures, tutorials and work on common collaborative projects. This model has been successful in terms of skills transfer and initiation of new collaborations intra nodes such as the Phylogenetics of Rabies viruses using NGS data that is now funded internally by IPT, Tunis .

One of the OS project goals is to help establishing more study groups across the network. We are aiming to encourage all the IBT 2018 classrooms to start study groups after the completion of the online course to continue helping each other learning Bioinformatics skills and practicing skills acquired on datasets examples.

Open Science pillars, source: http://blogs.plos.org/neuro/2018/01/31/open-science-sharing-is-caring-but-is-privacy-theft-by-david-mehler-and-kevin-weiner/

Amel takes a photo with one of the first open study groups in Sudan

The project also aims to connect H3ABionet consortium members with international Open Science groups to allow H3ABionet members to take part of workshops, hackathons organized by these communities.

In collaboration with Mozilla Foundation, the H3ABionet Open Science project will be running a series of Open Science trainings in East Africa in the fall 2018. Two-day training workshops will take place in 4 different East African countries (Uganda, Kenya, Sudan and Ethiopia). Three of the host institutions will be H3ABionet nodes and the fourth one in Ethiopia will be organized in collaboration with Capentries community lead.

The idea is to combine resources to bolster local educational initiatives, raise awareness, increase skills around open research, and ultimately help scientist

and researchers overcome the fears and challenges. With H3ABioNet support around venue coordination, Mozilla will allocate funding to launch a pilot training series that aims to fuel and facilitate networking, build regional and international partnerships in open science, and ultimately engender new communities of open science practitioners.

Mozilla foundation has been running several Working Open Workshops around the world during the last couple of years and will work with H3ABionet Open Science project on customizing the training to better adapt it to Biomedical researchers.

The Sustainability and Outreach work package monthly meetings take place on the **third Thursday of every month at 12PM CAT**.

By: Amel Ghouila and Jonathan Kyondo

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IBT's 3ʳᵈ Iteration is Well Underway

Lagos State University

Stellenbosch University

University of Cape Town

H3ABioNet's flagship Introduction to Bioinformatics Training course is currently in its 3rd iteration and is set to end in mid-December this year. This year we saw a total of 29 classrooms spread across 13 African countries (see map on left) and approximately 800 participants sign up, despite highly condensed timelines. This proves that demand is steadily growing with certain classrooms having over 300 participants apply to be a part of this wonderful training opportunity. We also had our very first Zimbabwean classroom sign up this year indicating that we are reaching more and more communities across Africa.

Some photos of our classrooms this year can be seen scattered throughout this article.

Left: Our Sudan classrooms are consistently some of our largest and the demand continues to grow. Right: Our very first classroom in Zimbabwe!!

Wits University
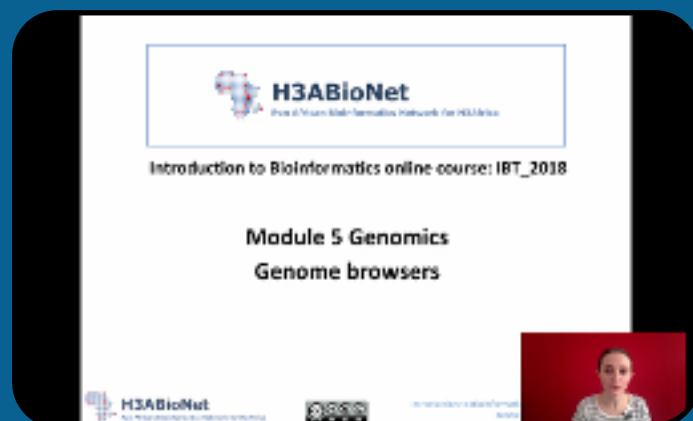
Agri, UofK

University-V-Rabat

DELEGME

MUHAS

Ibadan University

This year's iteration features updated content across many modules with Ensembl coming onboard to offer some exciting training on how to use their browsers and human genetic variation as part of our genomics module.

This year the course saw two new convenor's take over from Kim Gurwitz (the previous IBT course convenor) namely, Paballo Chauke and Verena Ras, both based at the central node in Cape Town. But this was not all that was new this year. We updated our conferencing platform from mconf to Adobe Connect and opted to post our lectures on youtube for the first time. IBT has a dedicated channel on youtube where our lecture content will remain posted and be updated when necessary.

Dr. Emily Perry (EBI) delivers her first lecture

Subscribe here now to see our lecture content and so much more on offer on our youtube page!

We look forward to the next iteration and hope for many more new additions to the IBT community next year.

By: Verena Ras

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The University of Ibadan Hosts: "Bioinformatics and Genomics: Embracing the Future" symposium

Acknowledgement

1. H3ABioNet
2. Computer Science Department, University of Ibadan
3. Post Graduate School, University of Ibadan
4. International Institute of Tropical Agriculture, Ibadan

UIBG Node Symposium Organizing Team

1. Dr. A.U. Makolo
2. Mr. Temitayo Olagunju
3. Mr. Taiwo Adigun
4. Mrs. Olubukola Smile
5. Miss. Chisom Ezekannagha

The dramatic explosion of genomic data has placed a number of constraints on the present computational tools available to process this data. Scientists thus need to remain abreast with these developments in their own analyses and projects.

To address this, the UIBG node of H3ABioNet, organized a one-day symposium for young faculties and PhD students in the University of Ibadan which also aligned with the commencement of IBT 2018 (our flagship Introduction to Bioinformatics Training course).

A total of 84 eager participants and students kicked off this meeting on the 3rd of September 2018 with opening remarks delivered by the Director, Research Management office UI, professor Ronke Odunola, followed by an address from the Chairman, Professor Ayoade Oduola. Both stressed the need for a greater emphasis on the knowledge economy within an institution. Professor Nicola Mulder delivered a keynote address in which she introduced H3ABioNet, it's aims, objectives and briefly introduced the various work packages. Some opening remarks were also delivered by Dr, Angela Makolo, PI of the University of Ibadan Bioinformatics Group.

Participants at a technical session

Our Ibadan organizing team poses proudly at the opening ceremony

Following the opening remarks a series of lectures were presented by various invited speakers followed by in depth discussion. Topics ranged from Bioinformatics and big data to machine learning and pharmacogenomics to name a few.

The event aimed to inspire young researchers and students, including those within the computer science domain to take interest in bioinformatics. An exciting event for our Ibadan node and we congratulate them on a wonderful initiative.

Some of the keynote speakers delivering inspiring talks. from left: Prof Mayowa Owolabi presents on the SIREN project; Prof Chinedum Babalola talks about bioinformatics and pharmacogenomics and Dr Olu Onifade delivers a cutting edge talk on bioinformatics and big data/machine learning

By: Angela Makolo

H3ABioNet 2.0 First Scientific Advisory Board and General Meeting

The first Scientific Advisory Board (SAB) and Annual General Meeting (AGM) for H3ABioNet 2.0 took place in Cape Town between the 23rd to the 27th of July 2018, eight months after the initial H3ABioNet 2.0 Kick-off meeting. The first two days of the meeting were devoted to H3ABioNet consortium business with members and project leads discussing the progress and challenges encountered so far for selected projects decided upon in the initial Kick-off meeting. The meeting also afforded an opportunity for members present to brainstorm some projects yet to start in person, rather then over conference calls.

As part of a continuing effort started towards the end of the H3ABioNet 1.0 and from the new Sustainability and Outreach Work Package (SO WP) to build a social media presence, the H3ABioNet Principal Investigators (PIs) and attendees to the AGM were provided Twitter training by Paballo Chauke: "How to be a Twitterazzi: Twitter 101 for beginners". Part of the Twitterazzi training included an explanation of the various terms and their usage in the Twitterverse, the differences between private, professional and Institutional Twitter accounts, how to build a following, guidelines on do's and don'ts of using Twitter. All attending H3ABioNet PIs and members present were taken through the process of creating a Twitter account, sending their first Tweet and how to follow the H3ABioNet Twitter account (@H3ABioNet). The SO WP members also managed to get Prof. Nicky Mulder on Twitter, where she has subsequently built a formidable following in a short period of time (@Nicky_Mulder).

Our twitter page has grown immensely since Paballo Chauke (right) has taken over. Here he can be seen teaching the consortium how to be a twitterazzi

Our new SAB. From left: Dr. Janet Kelso, Dr. Ken Wiley, Dr. Francis Ouellette, Prof. Teresa Attwood, Dr. Odile Oukem-Boyer, Prof. Michèle Ramsay, Prof. William Hersh

The 25th and 26th of July 2018 were dedicated to the reporting of H3ABioNet 2.0's current progress over the eight months to the new SAB members and the NHGRI H3ABioNet Program Official. During the H3ABioNet 2.0 Kick-off meeting in November 2017, nominations for SAB members with expertise in different domains with a brief oral motivation were put forward by attending H3ABioNet members and a vote held for each nomination by all the H3ABioNet members present. The highest polling nominees were approached to serve as SAB members with all of the candidates enthusiastically accepting their nominations to be an H3ABioNet SAB member. The H3ABioNet 2.0 SAB comprises of Dr. Francis Ouellette (Big Data), Prof. Michèle Ramsay (Population Genetics), Prof. Teresa Attwood (Bioinformatics Education), Prof. William Hersh (Health Informatics), Dr. Janet Kelso (Bioinformatics) and Dr. Odile Oukem-Boyer (Ethics).

The H3ABioNet SAB members and the NHGRI Program Official, Dr. Ken Wiley, provided a brief introduction about themselves to the consortium members present. Prof. Nicky Mulder presented an overview of the H3ABioNet consortium and current progress made to date from the Kick-off meeting to to the SAB and NHGRI Program Official. The H3ABioNet consortium consists of 28 Nodes in 17 African countries and 1 US based Node. As it was the first meeting for many of the SAB members, each of the 28 Nodes provided a five minute presentation that included an introduction, Node specific research focus, the personnel from the Node involved in the H3ABioNet 2.0 project, a summary of their computational resources and achievements in the reporting period to enable the SAB members to familiarize themselves with each of the H3ABioNet Nodes at an individual level. After the formalities of introductions were concluded, each of the Work Packages and selected projects nested in them provided presentations on their progress to date.

H3ABioNet members listen in awe at the progress made by the various Work Packages and projects

H3ABioNet comprises of eight Work Packages: Pipelines and Computing (PC WP), Tools and Webservices (TW WP), Databases and Resources (DR WP), Data and Standards (DS WP), Data Integration (DI WP), Health Informatics (HI WP), Training and Education (TE WP), Sustainability and Outreach (SO WP). An overview of the Training and Education Work Package was provided by Prof. Nicky Mulder. Dr. Benjamin Kumwenda, from the Malawi College of Medicine presented on the progress of their recent implementation of an MSc. Degree Program in Bioinformatics which was established in Malawi as an outcome from the H3ABioNet 1.0 Bioinformatics Curriculum Development workshop (https://www.h3abionet.org/curriculum-development).

The last session of the H3ABioNet 2.0 SAB meeting day 1 was devoted to a presentation on the H3Africa Data and Biospecimen Catalogue being developed which facilitates searching of metadata associated with the H3Africa genomics data and biospecimens by Hocine Bendou. The H3Africa Data and Biospecimen Catalogue was started in H3ABioNet 1.0 and this session was used to get the SAB feedback and foster a group discussion on the online portal by consortium members present.

Hocine Bendou and Sumir Panji working on the final H3Africa Data and Biospecimen Catalogue presentation for the SAB

Day two of the H3ABioNet 2.0 SAB meeting consisted of presentations to the SAB members and the NHGRI Program Official that covered a synopsis, progress and challenges encountered provided by the various Work Package Chairs and Co-Chairs as well as selected specific projects nested within these Work Packages. The SAB members provided verbal feedback on their current impressions, what can be improved and should be focused on for the next grant year in the last session of the day.

The last day of the 2018 H3ABioNet SAB and AGM was used to host two parallel half-day workshops. A workshop on Machine Learning and genomics was organized and provided by Dr. Amel Ghouila and the Machine Learning project members. The second workshop consisted of mapping the Kwame Nkrumah University of Science & Technology's new H3Africa Fogarty Degree program in Bioinformatics modules to competencies was organized by Verena Ras. The meeting concluded with discussion on establishing best practices for software development and identifying various datasets available to use for testing methodologies for different projects such as the Machine Learning.

Group picture of the H3ABioNet 2.0 2018 SAB and AGM attendees still fresh from all the brainstorming and presentations

By: Sumir Panji

Upcoming Events

- Registration for classrooms for the African Genomic Medicine Training Initiative are open: https://mailchi.mp/e26e2d6e10b0/agmt_2019-call-for-classroom-host-

- applications-now-open

- Leveraging Genomic Diversity to Promote Animal and Human Health Keystone Symposia - November 25th to 29th, 2018, Speke Resort & Conference Centre, Kampala, Uganda: http://www.keystonesymposia.org/18S5

- The REDCap Africa online call starting on 28th November 2018 and running on the last Wednesday of every month at 2pm (CAT): https://mailchi.mp/7a8ba6cdb622/redcap-africa-h3abionet-monthly-call?e=

- 338786563c

- The Global Genomics Medicine Collaborative will be hosting its conference "Genomic Medicine Implementation in Low Resource Settings" 28th to 30th November 2018 in Cape Town, South Africa: https://g2mc.org/events/

- Call for Proposals for Special Sessions and Tutorials at ISMB/ECCB 2019 is open until 31st January 2019 and 17th December 2018 respectively: https://www.iscb.org/ismbeccb2019-submit

- The 12th Annual conference for the Center of High Performance Computing (CHPC) will be taking place in Cape Town, South Africa from the 2nd to the 6th of December 2018: http://www.chpcconf.co.za/

- The "Next Generation Sequencing Bioinformatics" workshop by Wellcome Trust Overseas courses in collaboration with H3ABioNet and the University of the Witwatersrand will be taking place between the 27th of January to the 1st of February 2019 - Johannesburg, South Africa: https://coursesandconferences.wellcomegenomecampus.org/our-events/

  next-generation-

  sequencing-bioinformatics-johannesburg-2019/

- The eResearch Africa conference will be hosted by UCT eResearch titled "DataScience4D: Explore the practice, principles and opportunities of data science for development". The conference will explore the practice, principles and opportunities of data science in knowledge production and decision-making for societal benefit, and will take place from 15th to 18th April 2019 at the University of Cape Town: http://www.eresearch.ac.za/
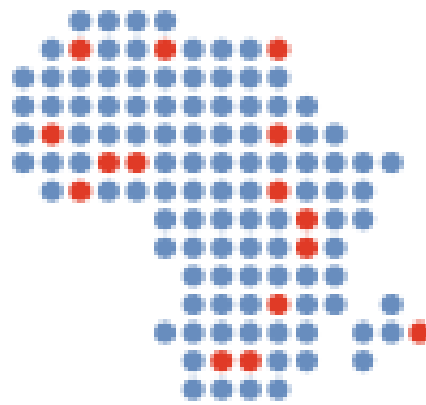
Announcements

- Congratulations to Prof. Ahmed Moussa, H3ABioNet PI of the Moroccan Node at the University of Abdelmalek Saadi for his nomination by the Moroccan government as Head of the National School for Applied sciences of Tangier.

- Congratulations to Prof. Ahmed Alzohairy H3ABioNet PI of the Zagazig University Node for his promotion to Vice-Dean for higher education and scientific research as well as for accreditation by the Supreme Council of Universities in Egypt for the newly established Egyptian Center of Bioinformatics and Genomics (ECBAG) as a unique center of excellence for scientific research and services in Egypt.

- Congratulations to Prof. Faisal Fadlelmola and his team from the H3ABioNet Node at the Center for Bioinformatics and Systems Biology, University of Khartoum for being the first H3ABioNet Node to successfully undertake the H3ABioNet Node Accreditation in RNA-Seq

- Congratulations to Prof. Tulio de Oliveira, PI of the University of Kwa-Zulu Natal H3ABioNet Node is team and H3ABioNet Alumni Jean-Baka Domelevo Entfellner for their seminal publication in Nature "Renewing Felsenstein's phylogenetic bootstrap in the era of big data." PMID: 29670290; doi:10.1038/s41586-018-0043-0

- Congratulations to the H3ABioNet Muhimbili University of Health and Allied Sciences Node, the H3ABioNet Institute Pasteur of Tunis Node and the H3ABioNet Computational Biology Division Node at the University of Cape Town for their recent collaborative publication: Ben Hamda C, Sangeda R, Mwita L, et al. A common molecular signature of patients with sickle cell disease revealed by microarray meta-analysis and a genome-wide association study. *PLoS One*. 2018;13(7):e0199461. Published 2018 Jul 6. doi:10.1371/journal.pone.0199461

Have an interesting story you would like featured in our newsletter?

✉ Email Verena Ras for further instructions!

H3ABioNet