- familiarizing the students with the command line interfaces to the tools, and the possibilities that they open up with regards to creating pipelines.

This course has been offered at the Mexican EMBnet node in March 2010, and will be offered at the University of Oslo later this summer. Feedback from the course in Mexico has been very favorable. The course material has been made available online, as has video recordings of the course.

In the past 3 years, we have also offered courses on the following subjects:

- Bioperl (July 2008)
- R (January 2009)
- EMBOSS/GCG (June 2009)

In terms of new areas of research, we believe that GPU computing is an exciting new field, and will provide significant improvements over CPU-based systems in terms of computational power for the price. Certain types of bioinformatics algorithms can be run in massively parallel mode using GPU cores and thus benefit from this technology.

To enable us to work in this new field, we have applied for, and received, funding to purchase a small GPU cluster. We have acquired a server equipped with 4 NVIDIA Tesla c1060 GPU cards, for a total of 960 processing cores. Two of these cards will be replaced by the next generation Fermi c2050 cards as soon as these are available on the market, bringing the total up to 1376 cores. The current configuration gives a processing power of approximately 3600GFLOPs. After the upgrade, this will be increased to approximately 4400GFLOPs. This system will enable us to both build competence in this important field, and allow our members to run their algorithms in an adequately powerful system. Our plan is to port various bioinformatics algorithms to the GPU processors and make them available to the node members by the end of 2010. We also plan to share our expertise with the EMBnet community.

The Norwegian EMBnet node wishes to acknowledge its user base and the Molecular Life Science committee of the University of Oslo for providing funding to achieve these goals. (http://www.uio.no/forskning/tverrfak/mls/kjernefasiliteter/miniplattformer/).

The South African EMBnet Node: AGM 2010 report

Winston Hide, Alan Christoffels

The South African National Bioinformatics Institute (SANBI), University of the Western Cape, Bellville

The South African National Bioinformatics Institute[1] (SANBI) conducts high-quality scientific research focused upon delivery of translatable biomedical discoveries, primarily through local and international collaboration with partner organisations. SANBI is part of the University of the Western Cape, situated outside Bellville near Cape Town. The Institute is headed by a Director, who reports through the Faculty of Natural Sciences, and provides overall leadership to the organization. The Institute consists of a group of faculty supported by technical and administration staff, guiding research of a group of Masters and PhD students and Post-Doctoral scientists.

SANBI became a member of the European Molecular Biology Network[2] in 1997. It developed close relationships with faculty at the University of Witwatersrand and University of Pretoria, supporting training and research there and at other sites around the country.

SANBI is well recognised in the areas of gene expression and host-pathogen disease research, including HIV, Trypanosomes and Malaria; and in the provision of bioinformatics and biomedical informatics training. This recognised expertise and proven capacity development has enabled the Institute to secure additional funding from a number of high-profile international agencies, e.g., National Institutes of Health, to expand its training programmes with the aim of developing faculty capable of producing NIH-funded research.

1 http://www.sanbi.ac.za/
2 http://www.embnet.org/

The Institute provides long-term skilling to impact on diseases prevalent in Africa, in particular the discovery of genetic factors that contribute to disease resistance in hosts, e.g., HIV and Man, and the genetic relationship contributing to cancers. SANBI's first major scientific breakthrough was in 1999, in collaboration with US investigators, and resulted in the discovery of a genetic cause for a type of blindness in humans called retinitis pigmentosa. SANBI became the bioinformatics research centre for the Centre for AIDS Programme in South Africa in 2003, and for the South African AIDS Vaccine Initiative in 2005, and has been integral to HIV research in South African vaccine development. The Institute has recently delivered high-impact publications in the area of mammalian gene regulation, with a resulting expansion in knowledge of how genes deregulate in cancers. The Institute has had a strong influence on the development of health biotechnology locally, and internationally, through development and deployment of software tools for genetic research, adopted by international biotechnology companies, such as Affymetrix, and by over 400 research institutions worldwide.

Staffing

SANBI recently went through a change in management as a result of the resignation of the founding Director, Winston Hide, who moved to Harvard School of Public Health, and now holds a visiting professorship at SANBI. In addition, owing to the creation of the King Abdullah University of Science and Technology, a group of faculty and staff also moved from SANBI, in 2009, to establish bioinformatics in Saudi Arabia.

New Faculty have subsequently been appointed, including a National Bioinformatics Research Chair holder, the interim director, Alan Christoffels, and Simon Travis (HIV Specialist). Owing to the change in management, and movement of several members of the institution to new positions both internally and elsewhere, continuity with EMBnet has had to be renewed. SANBI has completed the process of hiring three additional research staff members, one of which will become our new EMBnet Node manager.

Impact of EMBnet on South Africa and SANBI

The EMBnet node and management model has been of great impact in Africa. First, EMBnet actively supported the establishment of SANBI and provided training to our staff and subsequently to several of our institutions. Second, the model of management and node structure was adopted by SANBI in its drafting of a successful proposal to establish the South African National Bioinformatics Network. Although the network took up an aggressive 3-year training programme, it has subsequently been disbanded, as government priorities have changed. Now, more than ever, SANBI and African sites need continuity with European programmes such as EMBnet, in particular in terms of training opportunities and co-development. SANBI is currently a development site for the Galaxy system, providing a development nexus for annotation systems, in addition to being a site for deployment of EMBOSS.

Service

Since becoming a member of EMBnet, SANBI has provided online and remote support for bioinformatics activities throughout South Africa. It provides online specialized tools through its website, and complements these with specialised training and databasing services, such as those for HIV, and focused support of national and local research efforts in trypanasomes, tsetse fly genomics, cancer, food safety, and related biotechnology projects. Faculty and staff at SANBI have provided onsite trainings for other institutions, and a staff member also has been seconded to the national health laboratory service, to provide expertise and training remotely over longer periods of time.

Training

SANBI hosts bioinformatics training workshops for African scientists funded through the WHO, the UK Welcome Trust, the SA National Research Foundation, the US National Institutes of Health and the Centres for Disease Control. With the disbanding of the National Bioinformatics Network, SANBI continues to fill the gap in national training, by coordinating 6-week introductory bioinformatics courses across the country. In February 2010, the national course was attended by 30 delegates, representing 5 universities. Annually, SANBI hosts a regional Ensembl training course for 25 delegates, which is presented by an EBI trainer. Most recently, SANBI hosted a national workshop, for 45 attendees, on genomics data interpretation, with presenters from South Africa,

Harvard and Stanford. In addition, SANBI offers formal degrees at PhD and Masters level. SANBI is a founding member of the African Society for Bioinformatics and Computational Biology, and will be a host organisation for the 2011 regional meeting of the International Society for Computational Biology in Cape Town.

Facilities

The Institute has adequate scientific computer infrastructure, and is the site for a pair of high performance 32 CPU IBM P-690 servers and, in the next month, an 8 CPU Xserve cluster, which provide a significant proportion of the research compute infrastructure for bioinformatics in Africa. SANBI scientists have workstations and Internet access, as well as backup and disk storage. In late 2010, SANBI will move its premises to a new building, offering extensive training facilities, a visiting scientist facility and meeting rooms, in addition to the research and service provision currently performed.

Research

- Delivery of an African driven analysis and annotation of Glossina, the vector for the tsetse fly.
- Through capacity developed from genome annotation, we apply expertise and technologies developed to other relevant organisms to African health, with a particular emphasis upon integration of HIV clinical, immune and sequence diversity outcomes, and pathways analysis in Malaria.
- We integrate comparison of vector, host and pathogen genomes to deliver unique African knowledge of HIV and Malaria.
- Develop and apply understanding of normal and diseased human gene expression to diseases relevant to South Africans.
- Develop capacity of scientists through tightly defined research projects that have high impact on health in South Africa.

EU Collaborative projects

SANBI faculty and post docs have enjoyed funded collaborations through the EU FP funding programmes and currently we serve on the SYSCO programme, together with Institut Pasteur Tunis and Paris, and Max Planck Berlin.

The Swedish EMBnet Node: AGM 2010 report

Nils-Einar Eriksson

Computing Department of Uppsala Biomedical Centre (BMC), Uppsala, Sweden

People working for EMBnet Sweden are Nils-Einar Eriksson (TM PC), Emil Lundberg, Martin Norling (PR PC) and Erik Bongcam-Rudloff (EMBnet chairman 2003-2009).

Services

EMBnet Sweden has a web-site connected to several unique tools produced by members of EMBnet together with their associated researchers. EMBnet's video conference system (Marratech) is located and managed at the Swedish node. Uppsala University is providing mail-list services for EMBnet. The lists are managed by node personnel. DNS master services for EMBnet are also provided by the Swedish node.

SeqScoring

The tool can be used to up-load your SNP- and indel- files from large re-sequencing projects, and get the data scored by conservation across species: www.seqscoring.net.

EVALLER

EVALLER™ is a web-tool wherein you can electronically test (e-Testing) a protein's potential allergenicity/cross-reactivity based on its amino acid sequence (http://bioinformatics.bmc.uu.se/evaller.html).

MolMeth

MolMeth is a structured database that provides free access to methods used in molecular biology and molecular medicine. Submitted methods and contributions are subject to curation. www.molmeth.org.