The Centre for Genetic Epidemiology and Biostatistics was successful in winning one National eResearch Collaboration Tools and Resources (NeCTAR) grant submission and was a successful participant in another. These two grants will help position the Centre in its objective to become a leader in the quest to better comprehend how underlying genetic variations/mutations interact with environmental factors to cause disease.

Biomedical research is becoming a data-intensive form of research, and bioinformaticians need access to the best data and workflow management, data analysis, and visualisation tools; to the huge amounts of data being generated nationally and internationally; to specialised and high-capacity (peta- and soon exa-scale) storage and high-performance computing (HPC); and the training and support necessary to support this research.

The objective of the successful UWA Cloud-base Bioinformatics Tools NeCTAR bid is to continue to develop The Ark web-based software already developed and deployed by the Centre to facilitate the collection, management and extraction of research data and to provide the ability to integrate these tools with the genetic data management and analysis capabilities being developed by the Genome Informatics Network (GIN) project. Funding for the Cloud-based Bioinformatics Tools project will come from in-kind collaborator contributions of $345,000 in the form of cash and in-kind labour, $10,000 of Centre funds with $10,000 in matching funds from UWA, and $306,000 from NeCTAR. The Cloud-based Bioinformatics Tools project is a collaboration between the Centre for Genetic Epidemiology & Biostatistics at The University of Western Australia, The Centre for Mega Epidemiology at Melbourne University, St John of God Hospital, and The Clinical Oncological Society of Australia (COSA).

The GIN, which began at the University of Queensland, is a distributed organisation including several leading Australian universities, the CSIRO, EMBL Australia, and the Australian Genome Research Facility (AGRF). The GIN will support the research community by integrating and managing a “virtual laboratory” for genomics. This will consist of the most widely-used workflows; tools for genomic data analysis, workflow management, and visualisation; locally generated and reference genomic data; and whatever specialised resources our research community most needs. International and local bioinformatics communities have invested heavily in the development of workflow management and visualisation software such as Galaxy, GenePattern, BioFlow, the UCSC Genome Browser, the Ensembl Genome Browser, the Interactive Genome Viewer, and GBrowse, amongst others, so the GIN will not develop new eResearch tools but will invest in providing our researchers with local access to the most important tools, data, and systems.

As a result of supporting the GIN Virtual Laboratory NeCTAR submission, through committing a postgrad researcher 50%, the Centre has the opportunity to be an active contributor to the GIN project as well as being able to leverage the expected outcomes of this project. The UWA Centre for Plant Energy Biology is also planning to contribute a postgrad researcher 50% to the project and the expectation is that NeCTAR will then fund a technical resource 50% to be located at UWA to assist in the local implementation of the NeCTAR infrastructure. The resulting integration of The Ark software tools and the GIN virtual laboratory will provide the Centre, UWA, Western Australian and Australian researchers with a world-leading platform for conducting genomic research. As a member of the GIN consortium the Centre will gain access to the infrastructure as it is developed whereas most researchers outside the consortium will not have access to these resources until 2014 at the earliest.

To make the most of this unique opportunity the Centre intends to raise the funds to genotype 1000 individuals from the Busselton Health Study cohort. This new genotype data set, coupled with the associated rich set of phenotypic and pedigree data collected over the last 30 years and the new infrastructure that will be developed through the NeCTAR funding will position the Centre and Busselton researchers to become dominant players in the search for the genetic variations/mutations and environmental factors that cause disease.

We have discussed our plans with Ian Small from the Centre for Plant Energy Biology and we agree that having the UWA representative of the GIN project situated within iVEC would be the best outcome for all parties concerned, if this is possible.

To fully capitalise on this opportunity the Centre for Genetic Epidemiology & Biostatistics is requesting that UWA contribute the additional 50% salary to match the 50% from NeCTAR for a technical resource to be located within iVEC. The Centre is also requesting an additional 50% salary to ensure that a Centre for Genetic Epidemiology & Biostatistics postgrad student can be allocated to the project full-time.