

Centre for Gene Research

December 2001

From Your Director
Bioinformatics Club
Real Time PCR News

From Your Director



This newsletter has turned into something of annual report for the year 2001 highlighting some of the events of the year and the outcomes of the CGR Committee meetings. Getting a newsletter out seems to have become a huge task -- one put aside pending other more urgent matters. There is the question: Is a newsletter still necessary or relevant given the website, email-lists and discussion groups??? The Centre for Gene Research is a grassroots organisation and like any patch of grass it needs to be watered and fertilised and taken care of otherwise it will become paved over with concrete slabs of bureaucracy. I see this Newsletter as the equivalent of mowing the lawn.

Early in 2001 we went around beating the bushes for support for the replacement of the ABI 377 sequencer given that the manufacture of this instrument had been discontinued and it would be just a matter of time when it became obsolete. An appeal went out to CGR members to support the purchase of an up-to-date capillary sequencer. A total of 41 PI's responded with the titles of their projects, the staff involved and the source of their funding. This represented a total of 169 EFT's who were using the DNA sequencing facility. The total membership of the CGR is about 370, some of whom are postgraduate students and associated members. A proposal was put together for the ABI 3100 capillary sequencer and to make a long story short, the Equipment Committee initially agreed in principle to the purchase of this piece of equipment. But as time wore on we were asked to resubmit the request under the CAWSEP -- the new capital works and significant equipment procedure



and then we put the request out for tendering. By the time the tendering process was over there seemed to be less money available than originally indicated and the Beckman CEQ2000XL came in at a significantly cheaper price than the ABI 3100. Our arm was pretty much twisted by the Equipment Committee to accept the CEQ2000XL offer or go back to the end of the queue. After speaking to a couple of satisfied Australian users of the CEQ2000XL we accepted the lesser option. One of the fish hooks of accepting the grant for the new DNA sequencer was that we were not to come back to the Equipment Committee again in a few years time expecting another one. In other words we would have to find money from elsewhere for the next sequencer upgrade. At this stage we are NOT considering charging users depreciation on the equipment -- this is definitely the least favoured and last option. We are having on-going discussions with the Dean of the School of Medical Sciences about possible alternate schemes.

Since early last year there have been increases in the running costs of sequencing which the CGR has been absorbing. For example, the cost of the ABI Big Dyes has increased from \$12 per reaction to \$17 or up by 40%. We can no longer afford to subsidize these costs from our limited financial reserves and the cost will go up. We have yet to evaluate the costs of running the CEQ2000XL capillary sequencer but the initial indications are that they will be very similar to the ABI costs.



The commissioning and the test runs of the CEQ2000XL were something of a trial by fire since we were hoping for a transition period. However the ABI 377 broke down and we tried to get as many sequences done before the Christmas break. The plan is that we will run both the ABI 377 and the CEQ2000XL and offer a choice to users with the

understanding that the ABI 377 would eventually be decommissioned. The initial runs from the CEQ2000XL seem comparable to those from the ABI 377 -- certainly brilliant for PCR products with some fine tuning required for sequencing from plasmids. The main problem with plasmid DNA is that the capillaries are very small and the viscosity of large pieces of DNA tends to clog the capillaries. One of the many advantages of the CEQ2000XL is that sample handling is very much easier and the background fluorescence in the infra-red region is practically non-existent so that very low concentrations of DNA can be

accurately detected. Also since each sample runs in its own capillary there is no 'bleeding over' from adjacent samples. A problem we still need to work around is using ABI software to read the scf file format. While the scf file format can be read by most third party software packages like DNASTar, Sequencher and GCG, it can not be read by the ABI software. We will soon have conversion software (a la Peter Stockwell) that will convert scf files to the ABI file format and allow you to continue using the free ABI software.

One of the main uses of the CEQ2000XL at other centres is fragment analysis and the detection of alleles, etc. This is something we will be exploring further and will hold a workshop on this topic.

Some of the other activities in 2001 was the launching of the new CGR website with its own URL (cgr.otago.ac.nz). Websites are quite hungry for content and we are always looking for fresh content on a regular basis. We get a good rating by the [GOOGLE](#) search engine and consistently get into the top 10 for gene research' from 1.3 million websites!! This is mainly to due (to the good design!) To the content which comes from the HTML versions of the PCR PowerPoint presentations and other resource materials on this website. "Content is King!"

On August 28th we held a combined Annual CGR Poster Night with the Research Themes: (i) Functional Genomics, Gene Expression and Proteomics; (ii) Oral Microbiology and Dental Health;(iii) Virology. The venue was the upstairs. "Scholar's Bar", Staff Club and about 80 people attended. There were four student poster prizes of \$150 each, sponsored by CGR and the research themes. The prizes were presented by Martin Kennedy, the visiting Poster Night guest speaker.

The Centre for Gene Research Poster Prize was awarded to Elizabeth Duncan for the poster entitled: A cDNA MICROARRAY APPROACH TO CANDIDATE GENE DISCOVERY IN FACIAL ECZEMA RESEARCH. E. J. Duncan, D. Hyndman, T. Wilson and S. H. Phua AgResearch Molecular Biology Unit, Department of Biochemistry

The Functional Genomics, Gene Expression, and Proteomics Research Theme Poster Prize was awarded to Marjan Askarian- Amiri for the poster entitled: IDENTIFICATION OF SITES OF INTERACTION OF THE TRANSLATIONAL RELEASE FACTOR WITH RIBOSOMAL. Marjan Askarin-Amiri, Debbie-J Scarlett and Warren P. Tate.

The Oral Microbiology and Dental Health Research Theme Poster Prize was awarded to Mehdi Rahimi for the poster appropriately entitled: FORENSIC PCR ANALYSIS OF BACTERIA RECOVERED FROM BITE MARKS. M. Rahimi, N.C.K. Heng, J.A. Kieser and G.R. Tompkins

The Virology Research

Theme Poster Prize was awarded to Dongho Kim for the poster entitled: NUTRIENT REGULATION OF UCP2 & UCP3 EXPRESSION IN C2C12 CELL LINE. Dongho Kim and Mary P. Thompson

In October we held a users workshop on sequencing and Real- Time PCR based around the ABI equipment where we went over some of the DNA sequencing problems and the latest information on the 7700 PCR protocols.

The ABI 7700 PCR equipment is heavily used and fully booked and in some ways has become the victim of its own success. In a six month period we clocked up 300 runs which means that the equipment is running at full capacity for most of the time.

In October we had a fascinating seminar on the protein chip technology, the [CIPHERGEN Proteinchip](#) and finally ended the year (December 7th) with the Microarray Forum organised by Kyoko Koishi and Jo Stanton.

In 2002 I began the third year of my second term as Director of the CGR and there are times when I have worried about where the CGR sits among the themes and schemes scenario. The challenge is to find an administrative home because when things go wrong we are really in a free-fall situation -- an orphan without a home. We can continue to be a grassroots organisation as long as we can remain financially viable and therein lies the challenge for the years ahead.

.James Kalmakoff

Bioinformatics Club

Ever wanted to get a handle of this bioinformatics stuff or thrash out some ideas of your own?

Amonida Zadissa, a Bioinformatics Ph.D. with AgResearch, and Grant Jacobs, formerly a Research Fellow at Biochemistry now operating as BioinfoTools, held the first meeting on Tuesday 12th February at 4.00

pm. The venue was the Reading Room on second floor at the Biochemistry Department. The details of remaining meetings will be finalised at this first meeting. Meetings will likely be held every two weeks. You will be informed by email when upcoming meetings are, who is speaking and their chosen topic.

People from any university department, local commercial venture, institution, or whatever are welcome. Students are strongly encouraged to join. If you are interested in joining, send an email to bioinfoc@sanger.otago.ac.nz. Emails sent to this account will be forwarded to both organisers automatically.

Let anyone else you feel may be interested know. Below are some brief thoughts about the BC. The overall aim should be to share and learn approaches to bioinformatics problems. Presentations should encourage discussion and be aimed at a fairly general level. People can always ask for more detail if they want it.

Topics don't have to be picked from a recent paper: use this as an opportunity to read up a topic you have been meaning to dig into because it interests you. Pretty much anything will go for topics, but we discourage blow-by-blow accounts of using some "pretty user-interface" unless it genuinely offers something new. More interesting would be discussion of the concepts behind bioinformatics methods, datasets that pose interesting bioinformatics problems and the issues involved in analysing them, etc., than exactly how to run some specific software or web site.

Chris Brown (Biochemistry Department) has suggested that each speaker introduces their own work briefly before giving their presentation, which we think is an excellent idea. The main talk can be your own work if you feel so inclined. Talks shouldn't be allowed for discussion with a maximum of an hour for the whole meeting. If anyone has further suggestions/ideas, we're happy to hear them, just send us an email.

Hope to see you there!

Amonida & Grant

Real Time PCR News



This year has seen a large increase in the number of users, which is great to see. There has however been a down side in that at times it has been operating 24 hours a day and your have had to book a week or two in advance to get on.

Towards the end of the year we had the first ever Users Workshop. We had two "experts" from Applied Biosystems Australia here. They gave a general seminar on real time PCR (Taqman) technology and the latest developments form their company. this was an open lecture. After the tea break there was an opportunity for the users to hear about more practical matters and discuss their own problems/experiences. Over the next day there was also the chance to have a one on one session which many people took advantage of. As I only use it periodically I found it an excellent refresher course and introduction into the SYBR green analysis.

From the feed back I had everybody found it a worthwhile exercise. Perhaps we can make this an annual event. I have continued to pass on all information sent by Applied Biosystems, sorry to those who receive it directly. A hard copy is placed in a folder under the ABI 7700 o the 8th floor of Micro. This year Richard, fro Applied Biosystems, has written a Compendium for users. It includes troubleshooting, tips and frequently asked questions. Copies of the latest version are on the CGR/PCR server. Things have run smoothly over the year with only the odd problem. Hopefully 2002 we run smoothly.

Lynn Slobbe