Frontiers of Functional Genomics

An ESF Research Network Programme

EUROPEAN SCIENCE FOUNDATION

SETTING SCIENCE AGENDAS FOR EUROPE

The Third Frontier

Welcome to the third newsletter of the ESF Frontiers of Functional Genomics research network programme, or FFG. Many of you will be reading this as you sip your coffee while waiting for the next eventful symposium to begin here in Innsbruck at our 3rd Conference on Functional Genomics and Disease. For those of you who have not been able to join us here in the Alps, we will bring you news of the many highlights in the next newsletter – yes, you've guessed it, the Fourth Frontier.

In the meantime read on and enjoy: Juan Vaquerizas shares his experiences of an ESF exchange grant which took him travelling from Spain to Cambridge; Pablo Villoslada discuses the challenges of bringing a systems biology approach to medicine; and find out which of our steering committee is a fan of Mr Darcy!

The Fourth Frontier promises to bring news of new events for 2009 following our recent call, and our steering committee spotlight will reveal some rock and roll roots! Like to know which eminent scientist from our steering committee this is? Then join our email list at www.functionalgenomics.org.uk/sections/contact/join.htm or contact cheryl.smythe@bbsrc.ac.uk to receive the Fourth Frontier.

Apply for science meetings and travel grants

FFG invites proposals from organisers of science meetings to be held in 2009 on topics with a clear connection to the programme. Priority is given to events taking place in countries that financially support the programme and especially those who have not yet hosted a meeting: Denmark, Luxembourg, Poland and Switzerland.

FFG is also offering a number of Short Visits and Exchange Grants (up to 6 months). Projects must be within the scope of the programme and start during 2008 or 2009. Priority is given to applicants coming from and intending to visit labs in countries that support the programme.

Countries currently supporting the programme are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey & UK.

Deadline for submission of proposals is Friday 17 April 2009 17:00 CET. There will be another call for proposals in autumn 2009. For further details and to apply online go to www.esf.org/ffg or for regular updates on events and funding opportunities join our email list at www.functionalgenomics.org.uk/sections/contact/join.htm or contact cheryl.smythe@bbsrc.ac.uk.

Future Events

2nd Central and Eastern Europe Proteomic Conference, Jena, Germany 12-15 October 2008

22nd International Mammalian Genome Meeting, Prague, Czech Republic 2-5 November 2008

Development of Standards-Compliant Tools for Molecular Interaction Data Management, Hinxton, UK 16-19 November 2008

The Computational Challenges of the Next Generation DNA Sequencing, Uppsala, Sweden 14-16 December 2008 – date to be confirmed

Ortholog Databases, Cambridge, UK 2009 – date to be confirmed

For scientific reports from our past events, please go to our website www.functionalgenomics.org.uk.

Banking challenges for biology

Jane Kaye

With Europe planning to provide welcome support in the new FP7 call, hopefully the credit crunch won't affect the world of biobanking. However there are many ethical and regulatory issues still to resolve: the conference "Governing Biobanks: what are the challenges?" attracted 130 delegates from 35 countries and was the first conference in the world to focus solely on the governance of biobanks. It was run jointly by The Ethox Centre, University of Oxford, UK and The Centre for Law and Genetics in Tasmania, Australia and sponsored by The Wellcome Trust and the ESF FFG programme which funded a number of student bursaries.

The aim of this conference was to explore some of the complex and challenging issues that emerge from the governance of biobanks. Topics ranged from the principles that should underpin governance models; feeding public engagement results into policy; whether a broad consent should be sought in biobanking or if there should be consent for governance; understanding the role of regulatory bodies; protecting privacy; global governance of research; and models of benefit-sharing. The plenary sessions stimulated some lively discussion and prompted valuable question and answer sessions.

The keynote speakers for the conference were: Martin Bobrow, Tim Caulfield, Susan Leigh Starr, Bartha Knoppers, Christine Hine, Peter Glasner, David Winickoff, Mike Parker, Anne Cambon-Thomsen, Ousman Nyan, Tohru Masui and Jane Kaye with commentaries from Alastair Campbell, Don Chalmers, Graeme Laurie and Andrew Smart.

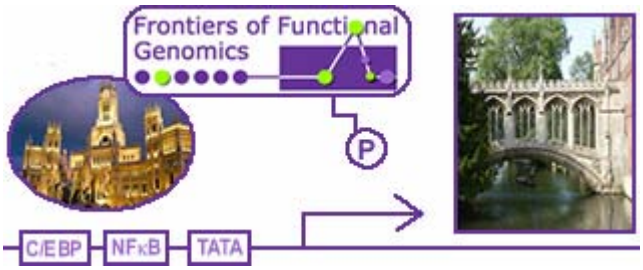
This conference has enabled connections to be made between researchers from different countries which will lead to further research in this area, and underlined the importance of good governance practice in the development of new biobanks and biobank networks. There are plans for a future conference in 2010.

From Madrid to Cambridge: characterising transcription factors in the human genome

Juan M Vaquerizas

Transcriptional regulation is undoubtedly one of the most exciting areas of research in the life sciences due to the importance of gene expression and protein abundance control in healthy and disease tissues. Most studies in humans have focused on detecting targets of known transcription factors either experimentally or computationally, but so far we have lacked knowledge about the transcription factors themselves.

As an ESF Exchange Grant holder, I visited Dr Nicholas Luscombe's laboratory at the European Bioinformatics Institute (EMBL-EBI), in Cambridge. During my stay we explored this field to uncover how transcription factors work in healthy human tissue samples using publicly available data. Surprisingly given the level of interest in transcriptional regulation, there were no high-quality reference sets of transcription factors for human, so we needed to compile our own dataset. By careful searching for proteins containing sequence-specific DNA-binding domains, we identified a repertoire of 1,369 DNA-binding transcription factors in the human genome.



Over 90% of these regulators are uncharacterised. Therefore we proceeded to assess the broad characterisation of these transcription factors by examining tissue-specific expression, evolutionary conservation and chromosomal organisation. The expression patterns of these transcription factors in 33 healthy tissues revealed a two-tier regulatory system based on ubiquitous and tissue-specific transcription factors, while the evolutionary conservation showed a step-wise introduction of transcription factor families during the primate lineage.

These results, as well as the transcription factor repertoire, provide an excellent foundation for future exploration of the challenging field of mammalian transcriptional regulation. The visit also allowed me to enter a new field of research and enabled my to establish important collaborations with scientists such as Dr Sarah Teichmann at the Laboratory of Molecular Biology (LMB), Cambridge. Since completing my stay, I successfully finished my PhD in Spain, and joined the EBI as a postdoctoral researcher.

Medicine meets systems biology

Pablo Villoslada & Ivan Martinez

The ESF Workshop 'Systems Biology in Medicine' was held in Barcelona in the first week of May 2008. The objective of the workshop was to establish a permanent link between medical doctors and systems biology (SB) scientists fruitful for both fields. In a clinical environment (Hospital Clinic of Barcelona), outstanding speakers from five European countries discussed the foundations of systems biology and its implications in medical practice. According to its objective, the organising committee designed a programme that was attractive to scientists from diverse disciplines including medical doctors, mathematicians and engineers. Nearly 60 participants with different backgrounds contributed to the workshop and engaged in stimulating talks regarding the benefits and obstacles that SB will encounter in its approximation to the daily care of individual patients. SB perspective for medicine would pay the benefit of promoting personalised medicine, such as identifying subgroups of patient good-responders for a given therapy, patients at risk of developing side-effects or the right combination and timing of the different drugs. However, it was discussed that there is still a long way until such promise should be realised because we lack enough knowledge and tools for applying to human biology. This meeting covered hot topics ranging from network biology to metabolomics. The organising committee was very pleased with the results of the workshop and looks forward to repeating this experience on a regular basis.

Steering committee spotlight

Isik Yulug is the Turkish representative on the FFG steering committee and also our newest member. Having spent her early career years in Ankara at the Hacettepe University, she then travelled to London to carry out her PhD at Imperial College. In the lab, she contributed to the expression mapping of human chromosome 21. Out of the lab she enjoyed all the sights and sounds of the big city. Back in Ankara, this time at the Bilkent University, she is now the deputy chair of the Molecular Biology and Genetics department. There, her group concentrates on the identification and expression profiling of the genes involved in initiation and progression of human malignancies especially in breast cancer. Her work has earned her prestigious prizes such as the L'Oreal-UNESCO Women in Science Award. When not in the lab, Isik enjoys a challenge on the ski slopes and is also a big Jane Austen fan. She is attending the conference here in Innsbruck, so if you see someone with a well-thumbed copy of Persuasion – that'll be her!

Compiled and created by Cheryl Smythe, FFG Co-ordinator