

Newsletter of the European Molecular Biology Laboratory
published by the Office of Information and Public Affairs



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exodus Departures are a sad fact of life at EMBL, yet there have rarely been such mass emigrations as the one which took place at the beginning of 2001. The corridors and Operon foyer were full of boxes as the groups of Kai Simons, Tony Hyman, and Marino Zerial packed up to head to the new Max-Planck-Institute of Molecular Cell Biology and Genetics in Dresden (accompanied by EMBL alumnus Wieland Hüttner from the University of Heidelberg). Carlos Dotti & Co. put on their sunglasses and headed off towards Torino, where they settled in at the Cavalieri Ottolenghi Scientific Institute. Before leaving, the gang threw one of those EMBL parties-to-end-all-parties, to a packed house in the Operon and canteen. The event is thoroughly documented by a photo-spread in this issue - well, at least, the publishable portion is.

Science and Society at the EBI

The EMBL Outstations are becoming increasingly involved in outreach activities, including Science and Society events. In January, the EBI's Industry Support Programme sponsored a meeting around the theme of the social and ethical implications of the Human Genome Project. Speakers included Science and Society Officer Halldór Stefánsson, Michael Ashburner, Martin Richards, Ruth Chadwick, Mike Stratton, and Andres Metspalu. Alan Robinson organized the meeting as "a forum to address many of the ethical and social implications of our work."



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An A above middle C

Some of us have it and some of us don't. Scientists have shown that many children are born with the ability to identify the absolute pitch of a sound. While a few people hang onto this talent over the course of their lifetimes, most of us lose it. Lena Reunis writes about perfect pitch in the column, *from the sister sciences*.



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First EMBL PhD

Joep Muijers is the first of EMBL's PhD students to receive a degree directly from the Laboratory - awarded jointly with the University of Nijmegen. He and the other EMBL predocs will receive their degrees in the EMBL graduation ceremony on June 8.



A new voice for the life sciences

EMBL, EMBO, and five other major life science organizations have hired Luc Van Dyck as the manager of a new forum to discuss the interests of life scientists and to represent them to policy-makers at a European level.

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moving on...



It was a dark and stormy night...

well, not really... it was a loud and festive night, one of those EMBL parties-to-end-all-parties, as the groups of Kai Simons, Marino Zerial, and Tony Hyman headed off to Dresden; Carlos Dotti is bound for the South. Everyone reports a smooth transition and promises high-impact papers in the very near future, as soon as they find the boxes containing their stuff. Parting gifts included an IBM Selectric typewriter, a robot that performs Elvis-like gyrations, to be displayed prominently in the MPI foyer, and various pieces of antiquated Lab equipment that we've been trying to get rid of for decades.

...and moving in



Addressing the ethical consequences of genome research

Students, scientists, ethicists and industry representatives gathered at the European Bioinformatics Institute (EBI) in Hinxton on January 30 to take part in a workshop on human genome research. The meeting was organized as part of the EBI's BioStandards Project, an initiative aimed at helping industry partners gain maximum benefit from the fast-growing field of bioinformatics through training and education as well as the development and adaptation of databases, software and information structures. This was the first workshop within the Project to address the ethical, legal and social implications of genome research.

"The impact of bioinformatics and computational biology - and information technology - in general - is increasingly important for all biotech-based industries, especially for the pharmaceutical sector, where advances in bioinformatics hold considerable promise for drug discovery and development," says Alan Robinson, head of the BioStandards Project. "With the announcement of the 'completion' of the Human Genome Project, we recognized that, as a leading genome sequencing and bioinformatics campus, we had not really provided a forum to explicitly address many of the ethical and social implications of our work. This workshop was aimed at scientists in genomics and genetics research so that they could get other perspectives and ask questions."

The workshop attracted participants from industry as well as from academia. "Many companies are already aware of

the need to consult ethics experts, especially if they are doing genetics research likely to have social and ethical implications. They realise that the public is becoming more aware and will start to ask more questions, and that they should be prepared," Robinson says.

Halldór Stefánsson, Chair of EMBL's Science and Society Office, opened the workshop with a historical look at public perceptions of biotechnology. He discussed how responses among the general public to the diverse products of biotechnology are in the process of reshaping the political landscape in the post-industrial

genome research, focusing on issues such as informed consent, confidentiality and privacy. Andres Metspalu, from the University of Tartu (Estonia), presented recent efforts by the Estonian Genome Project to establish a database based of genetic and medical information about the Estonian population, and Mike Stratton, from the Cancer Genome Project at the Sanger Centre, discussed the ownership and patenting of gene sequences.

Finally, Michael Ashburner, from the EBI, gave an overview of and commentary on the recent, controversial publication of Celera's human genome data in *Science* magazine. If genomics entrepreneurs want to reap the scientific benefits proper to the academic community, he maintained, they, too, must subject themselves to the core values and conventions which underpin that community. Unlimited sharing of all relevant information as a precondition for publication in a peer-review journal is, according to Ashburner, a principle worth safeguarding.

"The EBI's initiative to focus in on the ethics of genomics reflects the growing trend among members of the EMBL community to address the social and ethical aspects of the work that they are doing," says Stefánsson. A science and society lecture was held at EMBL Monterotondo in October, and staff at EMBL Hamburg are actively planning future events. "We are pleased to see a genuine interest in societal implications of research developing within the EMBL community. We hope to encourage and support these activities whenever possible."

--Sarah Sherwood



Alan Robinson and Halldór Stefánsson

world. Martin Richards, of the Centre for Family Research in Cambridge, presented results from surveys on the public's perception of genetic technologies, concluding that attitudes change depending on whether individuals perceive their rights to be protected or compromised by these technologies. Ruth Chadwick, from the Centre for Professional Ethics (Lancaster, UK), looked at changes in the way ethics are applied in the light of

Lab coats and business suits

Who are all those people wearing business suits, anyway? Since the summer of last year, new faces have been popping up in the EMBL corridors, running from lab meeting to board meeting. They are the staff of the start-up biotech companies, such as CellZome, Gene Bridges, Electa, Anadys, currently based out of EMBL. Come find out who they are and what they are doing on Wednesday, April 25, at 4 pm in the Operon. For more information contact Silke Schumacher at sschumacher@anadyspharma.com.



Come meet your friendly, neighborhood start-ups! Wednesday, April 25, at 4 pm in the Operon.

Taking the senior scientists' show on the road

Braving snow, rain, and incredible numbers of people driving on the wrong side of the road, twenty of EMBL's senior staff traveled to Hinxton at the end of February for meetings of the senior scientists and technology transfer committee. They also got the chance to hear presentations from EBI group leaders about Outstation projects.



The visit was the first of a series of senior scientist meetings to be held at the other EMBL sites. Fotis C. Kafatos suggested transplanting the meetings on a rotating basis as a means of improving communication between Laboratory units. Although the summer Council meeting typically moves from site to site, some senior scientists have not yet seen all of the Outstations. The recently-approved Scientific Programme is giving a strong boost to the external units, and it is a plan which proposes an even stronger emphasis on EMBL's natural interdisciplinarity. This, plus the fact that the meetings will give senior scientists more opportunities to hear first-hand from group leaders at the Outstations and Monterotondo, suggested that it was time to roust the scientists and move the meetings.

It is an exciting time for the EBI, which will be able to put many of its projects on a firmer foundation thanks to the Council's decisions and significant recent grants from the Wellcome Trust. The meeting also followed hot on the heels of *Nature's* publication focusing on the human genome, in which *Ensembl* and many other bioinformaticians from EMBL and the EBI played important roles.

On the second day of the visit, the senior scientists heard reports from group leaders involved in several major projects. Ewan Birney discussed the future of *Ensembl* and its contributions to the human genome project. Alvis Brazma talked about the problems of understanding complex gene networks, a question highly relevant to the impending launch of ArrayExpress, a public database for microarray data. Geoff Barton discussed the future of the Macromolecular Structures Database, which will be directly affected by numerous new structural genomics initiatives. Alan Robinson presented the activities of the Industry Support Programme, and Christos Ouzounis talked about the EBI's Computational Genomics research group.

The visit was appreciated by all the participants, with perhaps one small reservation: just when everyone had figured out which side of the taxi you were supposed to climb into, it was time to come home.

--Russ Hodge



Bridging the gap between



molecules and diseases

Interest has been steadily growing in the EMBL series of minisymposia on Molecular Medicine. The third installment, entitled "Structural and Bioinformatic Approaches to Disease" was held at the main Laboratory on March 20-21 and attracted over 150 participants. The symposium drew people from all over Germany, scientists from industry as well as academics. It was organized by Christoph Müller and Stephen Cusack, of the Grenoble Outstation, Matthias Wilmanns of Hamburg, and Peer Bork from Heidelberg.

Speakers included Thomas Ellenberger, David Banner, Keith Wilson, Stewart Cole, Jens Reich, Anthony Kerlavage, Mark Lathrop, and Vincent Stanton, Jr. Peer says that the meeting was very stimulating.

"It left everyone with a lot of questions, which is a very positive result," he says. "Over and over again we heard that while a lot of progress is being made on the molecular level, it is still very hard to bridge the gap to treatment and diagnostics, to really solving medical problems. Anthony Kerlavage said that Celera has a collection of over two million Single Nucleotide Polymorphisms, for example, but that it has been hard to tie single SNPs to disease phenotypes. Jens Reich gave an excellent talk about his work with clinics. From industry we heard about the strides that are being made in designing artificial molecules. It's becoming possible to build perfect inhibitors... but maybe they're too perfect? A lot of these questions have to be resolved before we see the types of direct medical applications that people are hoping for."

Consortium pledges to complete *Anopheles* genome sequence

In March EMBL announced that it will take part in a major international consortium with the aim of sequencing the genome of *Anopheles gambiae*, the species of mosquito most responsible for the spread of malaria in sub-Saharan Africa. The project builds upon gene discovery work already in progress at many of the participating institutes. The network includes EMBL, the Institut Pasteur, the University of Notre Dame (USA), the French National Sequencing Center (Genoscope), Celera Genomics (USA), The Institute for Genomic Research (TIGR, USA), the Institute of Molecular Biology and Biotechnology (IMBB, Greece), the ONSA network (São Paulo, Brazil) and leading mosquito researchers from around the world. The project has been organized under the auspices of the UNDP/WORLD BANK/WHO Special Program for Research and Training in Tropical Diseases (WHO/TDR, Geneva, Switzerland). The consortium will continue to seek the participation of even more organizations and funding agencies, in hopes of completing a first draft of the sequence by the end of 2001.

300 million clinical cases of malaria are reported each year, leading to 1.5 million deaths, mostly in sub-Saharan Africa. These numbers are on the increase because mosquitoes have become increasingly resistant to pesticides – the most effective weapon against malaria in the past – and because *Plasmodium*, the parasite responsible for the disease, is becoming more and more resistant to therapeutic drugs. An explicit goal of the genome project is to learn more about the mosquito immune system. *Plasmodium* can only infect humans after it has passed through the mosquito body and evaded the insect's immune responses. *Anopheles*' attempts to



graphics: Katrin Weigmann

ward off the parasite are only partially successful; enough of the organisms survive a three-week passage through the mosquito body to enter the salivary glands, where they can be passed on to an animal or human the next time the insect bites and feeds.

Researchers at EMBL and elsewhere are already creating DNA chips containing partial sets of the mosquito genome in hopes of identifying genes which are chiefly responsible for insect immunity. They hope their discoveries will fuel new methods of controlling malaria transmission.

The genome will be annotated by researchers at the EBI and other partners in the consortium; all of the information will be made publicly available. Currently this information is stored in the AnoDB (Anopheles Database), which has been supported by the TDR since its creation. The project includes the construction of an enhanced database called AnoBase, which will be modeled after such high-quality resources as FlyBase and *Ensembl*.

More info at: www.embl-heidelberg.de/ExternalInfo/oipa/

Completing the genome(s): a revolution with subtle effects

If you were puzzled by the recent fanfare over the publication of the two draft sequences of the human genome, you were not alone. It had been, after all, over 7 months since Bill Clinton and Tony Blair announced to the world that the rough draft was complete. Was this the same genome? Had it really been finished the previous June? Why the delay, and what, now, has been achieved?

The intervening months bear silent witness to the challenges of interpreting raw data on the scale produced by modern genome projects. It's important to get across that the human genome is enormous in comparison to anything sequenced so far. It does not fit onto a CD-Rom, or even a 2 Giga-byte hard drive. It's one thing to produce that much data in a short time frame, but quite another to say something useful about it.

Putting the pieces together has taken time. First the fragments of DNA produced by sequencing centres around the world have been assembled into a picture of a complete genome - the whimsically named 'Golden Path'. Then, more challenging still, the locations and sequences of genes have to be predicted from this picture of the DNA. With uncertainties compounding at every stage, analysis based on the final product are necessarily tentative, and the work ongoing. Already, the publicly funded consortium's gene predictions have moved on from those originally published, and the work is unlikely to be complete for many years. There are high hopes that the complete genome of the mouse will provide the key to unlocking the secrets of human genes. We will be in a better position to perform inventories then.

In a very real and practical sense though, the genome is complete: now is the time to be looking at it, and analysing it for genes of

interest. It's extremely unlikely that any theoretical insights are suddenly going to make it more tractable. Understanding will come from attrition. Providing a global analysis of 30,000 or so genes is formidably difficult but getting an accurate picture of new gene family members or the structure of a single gene is less so, especially when guided by expert knowledge. The genome sequence papers themselves were accompanied by a number of reviews of different biological systems with the immediate impact that in many areas a few more relevant genes have to be considered. These, however, only foreshadow greater things to come.

We can draw some parallels with earlier genome projects. Almost every complete genome so far has been touted as a revolution in our understanding of some aspect of biology. No doubt this is indeed the case, but the effects are felt in subtle far-reaching, rather than revolutionary, ways. New methodologies take time to filter through to the relevant research communities, and working practices take time to change. For example, more than two years had to pass after publication of the first prokaryotic genome in 1995 before comparative genome analysis really took off. After completion of the yeast genome in it took almost a year until the genes were in the right format to be easily accessible to a wide variety of researchers. The genome of *C. elegans* was published in 1998, but it is only in the past few months that we have seen the results of large-scale analyses of the functions of its genes.

The coming years will see us getting to grips with biology, rather than base counting. The genome data will certainly be an essential resource and reference for it.

--Peer Bork and Richard Copley

EMBL awards its first degree

Three-and-a-half years ago, Joep Muijers arrived at EMBL from his home town in the Netherlands to begin his doctorate in molecular biology. Now he is receiving the first EMBL PhD degree to be offered jointly with another institute, the University of Nijmegen. "Doing my PhD jointly with EMBL and the University of Nijmegen has let me benefit from both worlds," says Muijers. "While working in the EMBL environment, I was able to maintain close ties with my hometown university and advisors."

Muijers' work in the lab of Francis Stewart involved improving a fundamental tool of molecular biology: engineering DNA molecules. The recent shift to the study of whole genomes has placed a new emphasis on engineering very large pieces of DNA. Stewart's lab developed a strategy called ET recombination which allows researchers to fuse two DNA molecules of any size. This strategy has worked so well that it is now used in a number of new applications: to find and isolate specific pieces of DNA from a mixture of DNA molecules, to manipulate very large molecules like chromosomes, and even to create new strains of bacteria. Muijers explored the applicability of this technique and focused his PhD thesis on understanding the fundamental biochemistry by which ET recombination works.

ET cloning has also become the basis of a new company called Gene Bridges GmbH. "The PhD at EMBL has given me a unique and ideal opportunity to link business and research," says Muijers. His work with Stewart's group, plus the fact that he had completed a diploma in marketing before starting his PhD, put him in the perfect spot to become the company's marketing director shortly after submitting his PhD thesis. The company holds exclusive licensing rights to several DNA engineering techniques developed in Stewart's lab and is establishing a DNA engineering service; it will also continue research and development of the new technologies.

Currently over 150 students from 30 countries are working towards their degrees at EMBL. Until now degrees have been awarded by the students' home universities, the University of Heidelberg or other institutions. In December 1997, the EMBL Council gave the Laboratory the authority to award its own degree, and students may now choose to obtain their degree from their home university, from EMBL, or as Muijers opted, jointly from both.

The Council's decision to accredit the Laboratory acknowledges the quality of the PhD Programme and EMBL's true role in education. "Many students felt that they had done their PhD work at the EMBL and wanted that to be reflected in their degree," says Matthias Hentze, Dean of Graduate Studies. In its 18-year history, the PhD Programme has enrolled nearly 500 students and provided them with solid training in basic research.

The fact that an international scientific institute can award a PhD degree also highlights the need for a "European-wide" solution to diversity in national academic systems -- at a time of high mobility of European students and vanishing boundaries. "The international nature of EMBL is exceptional, and our Programme has been held in high regard for a long time," says Hentze. "The statutes of the Programme have been received very positively throughout Europe. There have even been discussions in national bodies as to whether this might be used as a model for making changes in graduate degree programmes at national institutions."

Granting joint degrees should also tighten partnerships with national universities. EMBL now has official agreements with the Universities of Grenoble, Lisbon, Madrid, Budapest, and Heraklion. Under these accords, EMBL will take responsibility for the training of the student, and the university will oversee thesis evaluation. The thesis advisory committee at EMBL will include a supervisor from the partner university, and the evaluation board at the partner university will include a member of the EMBL. "This close connection with partner universities could benefit PhD students in other ways, too," Hentze says. "For example, our PhD students have taken the initiative for the student symposium and we can now think of how the PhD students at the partner universities could be involved in such activities."

Though the EMBL PhD Programme has made great strides in recent years in achieving official status, there is still some work to be done. For example, there is not yet a German partner university, despite EMBL's intensive contact with the University of Heidelberg and other institutions. "There is a strong tradition in Germany that PhD degrees be given by universities and by nobody else -- and EMBL is not a university," Hentze points out. "But Baden-Württemberg has officially recognized the degree, and has taken steps to broaden this across the country. Until that happens, a stand-alone EMBL PhD degree will probably not be given. In the meantime, students do have the opportunity to obtain a joint degree."

EMBL also hosts many students who are working towards undergraduate diplomas. Currently, most of those students are from Germany. "There are some misconceptions about the relationship between this type of diploma work and the predoctoral programme," Hentze says. "It has arisen from the fact that some diploma students wish to apply to the PhD Programme, which was designed to benefit all of the EMBL member states. This does not mean that we have a quota system, but there is a rule about the maximum number of students that can be taken from any one country. There should not be more than 25% of students in the PhD programme from any country. If all the German diploma students who were here applied to the PhD Programme, they might have an unfair advantage over other highly-qualified candidates who hadn't already been in the Lab. Therefore, we encourage students from Germany - the only country that has so far risked exceeding the 25 per cent rule - to choose between doing diploma work or their PhD here."

-- Sarah Sherwood and Katrin Weigmann

Predoc selection week

Sixty-eight hopeful candidates from an application pool of 228 visited the main Laboratory on March 5-9 for the predoc selection week. After a welcoming session, candidates were given a tour of the lab, followed by a grueling succession of interviews and a "final admission assessment". Fingernails were bitten and the halls were paced as the candidates awaited the results. The annual Predoc party, thrown by the current PhD students, helped to ease the tension. In the end, 38 of the hopefuls made it through, and will arrive in Heidelberg in October to begin the PhD course.

Introducing the ELSF: a voice for the Life Sciences in Europe

WHAT IS THE EUROPEAN LIFE SCIENCES FORUM?

The ELSF initiative arose through the contributions of many people, including Fotis Kafatos, Frank Gannon, Kai Simons, and Julio Celis (Chairman of FEBS and former Chairman of the EMBL Council). It is based on the idea that only by unifying their voices can scientists truly reach policy-makers and have an impact, notably on the drafting of the EU framework programme (FP). Until now there has been no organisation which can speak as one voice for the entire community of the life scientists. This is the purpose of the ELSF initiative.

The forum was officially established last year by EMBL, EMBO, ELSO, FEBS, and three other founding members representing plant scientists (EPSO), neuroscientists (FENS), and atherosclerosis scientists (EAS). Our initial efforts have been almost exclusively directed towards the European Commission (EC) because the EC, along with the other European Institutions, the Parliament and the Council, is a major actor in determining European science policy, directly through its FP (which includes the funding of projects, fellowships, and infrastructures), but also indirectly. In many cases national policies are aligned with the FP in hopes that doing so will attract more EU funding for their own labs.

In the past, scientists have raised a lot of criticism about the FP, notably the lack of continuity in the programmes, the selection of projects not being solely based on excellence, the tedious application procedures and a lack of transparency in the evaluation of projects. The Fifth Framework Programme particularly received criticism; under it, the EC adopted a "target-based" approach with milestones and deliverables and the involvement of industrial partners, which in combination left very little room for open-end, creative research. Other concerns were raised regarding the future of science in Europe, most notably a growing disinterest in science on the part of the younger generation and the lack of perspectives for young scientists.

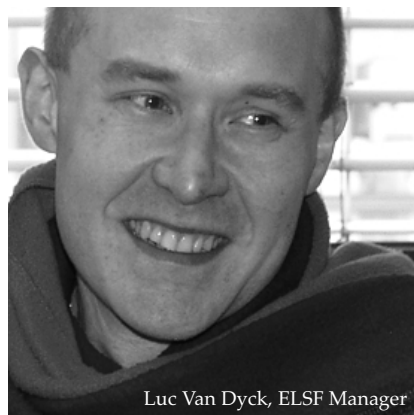
As a first contribution the ELSF has drawn up a series of suggestions that are outlined in the discussion document of the ELSF, available at the website, www.elsf.org.

WHY DO YOU THINK IT HAS TAKEN UNTIL NOW FOR EUROPEAN SCIENTISTS TO REALIZE THAT THEY NEED A LOBBY IN THE EU?

At this stage it comes back to a more basic question, the fact that most scientists in

Europe have never really gotten involved in explaining what they are doing, why they are doing it, and what they need to reach their objectives. Until recently everyone has been thinking in his own direction, often only about his own discipline, but rarely have people felt a strong need to get involved in policy-making or public information activities. This is no longer sustainable, notably at a time of integration of the various scientific disciplines.

The situation has made it difficult for policy-makers to obtain a clear and comprehensive picture of the opinion of the scientific community, which has resulted in misunderstandings. It is also noteworthy that the ongoing tremendous developments and achievements in the field of biotechnology, genetics and biomedicine have raised hopes and expectations,



Luc Van Dyck, ELSF Manager

sometimes irrationally, as well as fears in society at large. Life scientists may have to recognise that their attempts to explain their activities to society and to answer citizens' questions have been inadequate, for instance in the case of BSE and GMOs.

The organisations behind the ELSF have realised the need to take the initiative to develop a better, unified communication strategy towards citizens and policy-makers. The only way for the scientific community to have its voice heard and to be influential in the determination of European science policy is to unify to express its ambitions and needs. The ELSF, therefore, aims to gather representative actors in all disciplines of European life sciences, from scientists to clinicians, environmentalists and bioethicists. The ELSF will act as an interface between the scientific community and the European institutions. More specifically its aims are to channel information from and to the scientific community, to provide advice and proposals to the European Commission on questions of general scientific

policy and to generate position papers. Another objective may be to provide comprehensive information to all segments of society, with particular emphasis on the media, science teachers and politicians. Finally, the ELSF may represent an opportunity to discuss major trans-disciplinary issues like ethics or public perceptions of science, and to interact with other actors such as citizen organisations or regulatory bodies.

WHAT WILL BE THE FIRST STEPS IN THIS GESTATION PERIOD OF THE ELSF?

Our first task is to recruit more organisations to really become representative of all facets of the life sciences. At the moment our members are organisations representing mostly research scientists; we need to include others, notably those involving clinicians and social scientists.

Representing all these people will be a challenge. Obviously, scientists are a diverse group. Small labs doing very good science may have different requirements and priorities than good science done in big research institutions like EMBL. All the sensitivities have to be respected. The same holds true for research scientists and clinicians who may have different issues on their agendas. We intend to work on the basis of the "principle of subsidiarity," that is, only to do things of general interest or for which the action of the ELSF would add specific value. It is very important to respect the integrity and the particularities of each member organisation and not interfere with their activities.

So in the near future we hope to organise a "Constitution meeting" that would gather all these societies to clearly set out the objectives of the ELSF and create a clear mission statement. Then we will determine the best methods of meeting the objectives that we will set out for the Forum, in other words, how to efficiently access the scientists opinions and how to translate them in concrete actions.

In summary, my task is now to structure the Forum, recruit members from the various disciplines of the life sciences and organise the definition of the objectives and the mode of action of the ELSF.

AND IN THE LONGER TERM?

The Forum is really aimed at the long term. In a way, we have no other choice because we may have entered the picture too late to have a strong impact on the drafting of the FP6. Let me explain how a FP is prepared at the EU level. Last year, the European Commissioner for Research, Philippe Busquin, made a pro-

posal entitled "Towards a European Research and Innovation Area" (ERA) that has been endorsed by the Council and the Parliament. ERA is a good concept that aims at promoting a knowledge-based economy and society. Such a vision may have been somewhat lacking in the past. The instruments that have been proposed to implement the ERA are the 6th FP and the idea of a European Community patent. The EC proposal for the FP6 has been submitted for decision to the Council and the Parliament last February and arbitration will take place in the near future.

Both based on the EC proposal and my discussions with EC Scientific Officers, I feel that the Commission is taking into consideration many of the problems raised by scientists. Some of the motions suggested by the EC are very interesting: networking of excellence offering better opportunities for basic research, opening up national programmes to other EU member states, increasing efforts to encourage mobility among researchers, a focus on infrastructures, support for start-ups. It is far from perfect, but things are really going in the right direction.

Still, the EC Proposal is only a political document that, after arbitration, will have to be translated into concrete terms in the form of a detailed work programme. It is obvious when you read the Proposal that problems of interpretation may arise at that stage. Let me cite an example. The EC intends to put a great emphasis on strengthening the use of high-throughput technologies. Very good! Developing modern technologies is extremely important. But one should bear in mind that they mostly generate raw data. The elucidation of the biological processes also requires more "basic" projects. So it would be interesting to create networks of excellence even if they don't have a strong focus on high-throughput technologies. From the EC proposal, it is unclear whether this can be done.

At this stage it might thus be too late to intervene because the Proposal has been submitted to the Council and the Parliament. Scientists must, therefore, directly talk to the members of both European and national parliament committees and their government representatives before arbitration takes place, in order to introduce in the Proposal the necessary clarifications and modifications.

WHY THE EMPHASIS ON START-UPS AND THE CREATION OF A COMMUNITY PATENT?

Some people might find this emphasis on the positive role of the support for start-ups and the concept of European Community patent surprising; let me explain. If you compare the situation in Europe to that of the United States, you see that a



lot of public money in the US is spent on basic research at the university level. US institutions have very strong technology transfer departments, and what is not widely known is that about 70% of the all US patent applications come from the university sector. This doesn't really exist in Europe. Though the first task of public institutions is to perform good, creative research, it is true that our scientists may have to have a change of mentality and see more clearly what has to be done in order to gain intellectual property. Taking the option of massively supporting basic research may be easier for US policy-makers because they see so-called "returns on investments."

Big companies are no longer European or American, they are worldwide. If we want to create value specifically for Europe, with social and economic consequences, scientists at universities and at research institutes have to be targeted. They will be the source of start-ups and the development of intellectual property. More importantly, intellectual property rights may become a source of revenues for the public laboratories, thereby increasing their funding. Obstacles to that in Europe are notably the huge costs of patent applications, in part due to the absence of Community patent, as well as the absence of a grace period before filing applications. In the US a scientist can submit a patent application within 6 months after the publication of his work, but in Europe this is not true. Once a paper has appeared, you can no longer file the application. The problem is that, as we all know, publications are the barometer of a scientific career and there is no time to waste. The EC wants to help to change that, and this is certainly something we could look at in a positive way.

This is a very personal opinion that does not represent an official position of the ELSF. But if you consider the last decisions of the EMBL Council and the development of EMBLEM, and I refer you to the latest issue of *EMBL&cetera*, you may see that it reflects similar concerns.

DOES THE ELSF PLAN TO REPRESENT INDUSTRY SCIENCE AS WELL?

No, not directly, because our agendas are

somewhat different. But some of our member organisations comprise industrial partners. And when you read the position paper of the Animal Cell Technology Industrial Platform (ACTIP), you see that people from industry share some of our concerns and sometimes suggest similar options.

So we will certainly develop links to other stakeholders and, where appropriate, work together. Similar to the idea that supports the ELSF initiative, having the support and contributions from back-up participants like industry, regulatory bodies, funding agencies, patient and consumer organisations, and international organisations (ESF, WHO, UNESCO, and so on) would add weight to our efforts and increase our influence.

HOW DID YOU PERSONALLY GET INVOLVED IN THE FORUM?

I studied biochemical engineering in Belgium. In the early 1990s I worked on the Yeast Genome Sequencing Project with André Goffeau, who proposed, organised and managed this first genome project in Europe. It was really the pre-history of genomics - at the beginning we were manually sequencing about 2.5 kilobases of DNA per year and doing sequence alignments by hand. But the network structure of small labs that he put together led to the establishment of interactions and friendships that are still in place ten years later.

After that I did work on ATP-dependent proteases and mitochondrial biogenesis, notably in Munich in the lab of Walter Neupert, who is Chairman of the EMBO Council, with the support of an EU Senior Research Fellowship. I went on to work as a project manager in the research department of a major animal health company where I was responsible for external collaborations and public funding. Why the change? After twelve years at the bench I wanted to widen my perspectives, in part because I was losing my fighting spirit for day-to-day science. I have always been interested in human contacts and project management: what I would describe as the social side of science. From there, joining the ELSF and getting involved in policy-making has been a natural evolution.

At the moment I am the only employee of the ELSF. In the future, with the extension of the Forum, I should get help, but I think that at this stage I need to work on my own a bit. The position I have now is funded by EMBO. EMBO, EMBL and FEBS have agreed to cover all expenses of the ELSF for 3 years, which would be necessary to really implement the forum. Afterwards the ELSF should be independent and live from subscriptions of different member societies.

--interview by Russ Hodge

from the sister sciences

Perfect pitch: *use it or lose it*

Lovers of music, and all those who find some pleasure in extraordinary things, are herewith apprized that on Thursday next, 18 August, at Scharf's Hall on the Liebfrauenberg, a concert will be held at 6 o'clock in the evening, at which two children, namely a girl of 12 and a boy of 7, will be heard to play with incredible dexterity concertos, trios and sonatas, and then the boy also the same on the violin. And if this be unheard-of and incredible in such young children and with such power, since the boy is complete master of the keyboard...



From the *Ordentliche Wochenliche Franckfurter Frag- und Anzeignungs-Nachrichten*, August 16, 1763

The two children referred to in the 18th Century announcement above are Wolfgang Amadeus Mozart and his sister Maria Anna, on a tour around the courts of Europe. By Mozart's 6th birthday, he had not only mastered the violin and the piano, but also composed his first piece of music. It is therefore not surprising that he will always be remembered as a "wonder-child."

One thing that contributed to Mozart's talent was his ability to distinguish and identify a given note without another note as a reference point, which is called "perfect" or "absolute" pitch. Most people can name a tone if they are given another tone as a reference (called "relative pitch"). Perfect pitch occurs in approximately 1 out of 2000 adults, and there is evidence that the ability has a genetic base (Mozart's father, for example, was also a musician and composer). It can also be acquired through experience: past research has shown that children who are exposed to or trained in music very early in life seem to be more likely to have the skill.

Psychologist Jenny Saffran, Director of the Infant Learning Laboratory at the University of Wisconsin-Madison, presented some interesting research material on the topic in February in San Francisco at the annual conference of the American Association of the Advancement of Science (AAAS). In past research, Saffran has shown how infants use "statistical learning" to acquire language skills. By detecting consistent patterns in sounds, children learn where words begin and end within a sentence. Now she has demonstrated that infants equally apply this statistical learning when trying to understand music, and suggests that a large number of infants might be born with perfect pitch.

Saffran's lab designed a test both for adults and infants consisting of simplified "songs": continuous three-minute streams of bell-

sounding tones unrelated to any tune the subject might use as a reference point. After the infants listened to the "songs", segments were replayed. Some were identical to the previous versions; others were the same in relative pitch, but different in absolute pitch (for example, they were played an octave higher or lower than the original version). Applying the principle that children typically pay more attention to new stimuli, Saffran noticed that the infants devoted more "listening time" to those segments of songs with different absolute pitches than the identical segments. In other words, the first segments sounded different to the children, whereas adult subjects without perfect pitch could not distinguish between the original song and the transformed segments. (If they recognized the segment, they had forgotten the original pitch, or regarded it as irrelevant.)

When asked why most of us lose perfect pitch as we grow older, Saffran says: "Absolute pitch is too fine a form of categorization. If that's all we knew, we couldn't generalize any of the sounds we hear. If we only used absolute pitch as adults, we wouldn't understand that 'Happy Birthday' in two different pitches is the same song, or that the word 'cup' spoken by a man or a woman is the same word."

Obviously, perfect pitch could be a great advantage in the development of other musical abilities, but Saffran's work suggests that it has to be nurtured, or it is easily lost. Of course this doesn't mean that all children might turn into little Mozarts. Still, if you would like to find out whether you have preserved your perfect pitch, have a look at this website and put yourself to the test...

<http://homepage.ntlworld.com/lisa.griffiths/>

--Lena Reunis

For many the name of EMBO is synonymous with its Fellowship Programme. Indeed, one of the first actions taken by the EMBO founding members was to establish long-term and short-term visits (fellowships) to encourage movement of scientists to learn newly developing skills in the area of molecular biology. Since those days in the 60's, the programme of fellowships has expanded rapidly. Happily, financial support for it has also been consolidated through the establishment of the European Molecular Biology Conference (EMBC) in the early 70's. Today there are 24 member states in the EMBC, and they provide not only the financial support, but also an important linkage between scientists in the area of molecular biology and governments throughout Europe and the neighbouring regions.

The EMBO long-term fellowships are prestigious awards because the selection process is completely based on scientific standards. Only the best receive the awards and considerations such as geography or the research area are not factors in the decision-making process. Genuine Peer Review is the basis of selection.

When an application for an EMBO long-term fellowship is received, an EMBO member specializing in the area of the application is asked to interview the candidate (if they are in the European region). The report of the interview

together with the full documentation are then sent to a 10-person committee who individually score each of the applications. These scores are sent ahead of a meeting of this Fellowship Committee to Heidelberg to provide an initial ranking of the applications. This is finalized during a meeting which amazingly lasts just half a day. Equally impressive is the fact that the information on the outcome of the selection is on the EMBO website on the same afternoon.

The long-term fellowship scheme was handled for many years by Jennifer Norman (now Schulze-Eyssing), but for the last few selection rounds this major task has been carried out by Sara Quirk. The task is indeed major as between 300 and 400 applications are received at each of the two closing dates. It requires little imagination to realize that the work involved in opening that number of applications and then sorting, entering and processing is very extensive. When this is linked to the very tight schedule between closing date and decision making (10-12 weeks), the efficiency and dedication which goes into this phase of the work is obvious.

The contacts with the Fellows are now maintained not only through pay cheques but also through the ultimate enrolling of the fellows into the EMBO Fellows Network. This is managed by Andrew Moore, and those of you who have received EMBO Fellowships in the



past are warmly invited to register for this activity through our website www.embo.org.

The amplification factor of the number of applications, the number of receiving institutes, and the number of successful applicants who carry with them a positive recollection of EMBO is one which works very favourably for all of the other EMBO and indeed EMBL activities. The value in terms of allowing the world scientific community to know that high scientific standards are the norm in this European organization is a benefit which is difficult to assess but is also very real from many contacts which take place with scientists worldwide.

In summary, even when EMBO continues to expand its range of activities, the Long-Term Fellowship Programme remains a cornerstone for the Organization.

--Frank Gannon

From the Szilard library

NATURE online? Since March 1, online access to Nature (and related titles) has changed – access is now controlled by IP address recognition and there is no password access for EMBL. Unfortunately, not all the content is available immediately as full-text. EMBL (and all other institutions worldwide) only have access to "peer-reviewed material", such as Brief Communications, Articles and Letters to Nature. Items such as News, Correspondence, Book Reviews and News and Views, can only be downloaded after a delay of 3 months. Personal subscribers continue to have password-controlled access to the entire journal as soon as it is published. Anyone who wishes to comment about this situation should contact: Donna Muscatello, Nature Publishing Group, d.muscatello@natureny.com.

Book Scanner There is now a book-scanner in the library, which is being used to create digital images of articles (converted into PDF format), requested by researchers in the outstations. It can also be used by anyone else who wants to create a digital version of a document. Please ask the library staff for a quick introduction before using it.

Questionnaire Thanks to the 177 people who took the time to fill in the library questionnaire. We are now evaluating them and will publish the results in due course.

From the Staff Association

Rules and Regulations now on the web Staff in Heidelberg and at the outstations can now access the Rules and Regulations via the web at www.EMBL-Heidelberg.DE/ExternalInfo/GeneralInfo/StaffRulesAndRegulations/. Pdf files can be downloaded and read using Acrobat Reader and are searchable for specific topics. This site is in addition to the "Welcome to EMBL" site maintained by the Personnel Section: www.embl-heidelberg.de/ExternalInfo/GeneralInfo/StaffInfo/, and both are viewable externally and available to prospective as well as current staff.

Elections in April Several members of the Staff Association have changed this year, with members leaving due to natural "attrition" and to resignations. We would like to express our thanks and appreciation to those who served on the Staff Association committee. There have been many time-consuming yet important topics to deal with in the past few years, such as the health scheme, the pension scheme, and the ILO salary case. Work on behalf of EMBL's staff has been worthwhile, and we are beginning to see the fruits of our efforts!

Would you like to join us? Half the Staff Association representatives are elected or re-elected every year to a two-year term. We invite staff members from the following groups to run for election in April (one to be elected from each group): Group leader or Staff scientist, Technician, Administration, Postdoc, and Predoc. Any member of personnel who has a contract with the Lab is eligible. Contact the Staff Association office (room 330, Tel. 541, open mornings 8.30-12.30), or send an e-mail to staff@embl-heidelberg.de.

people @EMBL



Rob Russell joined EMBL in February as a Team Leader in the Structural and Computational Biology Programme. Rob did his PhD at the University of Oxford with Geoff Barton, post-doctoral work with Mike Sternberg at the Imperial Cancer Research Fund, London, and spent three years SmithKline Beecham Pharmaceuticals R&D in the UK. At EMBL Rob plans to continue work on structural bioinformatics, and drink coffee.



In pursuit of his goals, Rob can use, for example, the new **24-hour round-the-clock coffee machine**. We are not really sure how this is going to help him figure out the subtleties of cellular morphogenesis, but we imagine it can't hurt.



Need to do a Southern blot? After many years of deliberation, the cafeteria has decided to discontinue its use of waterproof, non-absorbent **napkins**, and replace them with something that is capable of soaking up liquids. They can be found next to the coffee machine. Unlike the cups and glasses, they do not need to be returned.

Who's new?

In the Biochemical Instrumentation Programme: Thomas Franz (Wilm), Ondrej Paces (Ansorge). In the Cell Biology and Cell Biophysics Programme: Luis Bejarano-Ardura (González), Ingrid Fetka (Brunner Group), Virginie Georget (Bastiaens), Silvia Palacios (Griffiths). In the Developmental Biology Programme: Edgar Kramer (Klein), Archana Mishra (Klein), Sandrine Pizette (Cohen), Lucia Poggi (Wittbrodt). In the Gene Expression Programme: Nina Helppi (Mattaj). In Additional Research Activities: Gareth Lycett (Kafatos), Sol Sotillos-Martin (Kafatos), Shin-Hong Shiao (Kafatos). In the Structural and Computational Biology Programme: Patrick Aloy (Russell), Ana Maria Fernández (Serrano), James Féthière (Böttcher), Esther Kellenberger (Sattler), Rob Russell (Russell), Rachel Santarella (Hoenger), Isabel Tomás Oliveira (Wade). At Monterotondo: Janice Carter (Minichiello), Diego Medina (Minichiello), Carla Sciarretta (Minichiello)

Elsewhere at EMBL: , Bodo Fischer (administration), Thomas Heinzmann (scientific support administration), Mary-Jane Villot (library)

At EMBO: Laura Connaughton, Kim Piggott, Luc Van Dyck

awards, honors &cetera

Marco Milán, from Steve Cohen's group, was one of two winners of the research prize awarded by the Peter and Traudl Engelhorn-Stiftung in January of this year. The 10,000 Euro prize is given to up-and-coming researchers in the field of biotechnology and genetics, and was given in recognition of Marco's contributions to the developmental biology and basic molecular genetic mechanisms of cell differentiation and organ development. For more information see http://www.engelhorn-stiftung.de/ptes_st.html



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Deadline for submissions is
June 1, 2001.**

False Positives

Here are this month's contributions in our continuing search for the "Best of PubMed." Have a look at these PMID numbers...

3762614
9281214
10991626
5020446

Send contributions to
info@embl-heidelberg.de

EMBL *&cetera* is published by the Office of Information and Public Affairs
EMBL, Meyerhofstrasse 1
D-69117 Heidelberg

Tel. +49 6221 387 252; fax 387 525
e-mail: info@embl-heidelberg.de

Editor: Russ Hodge; Associate Editor: Sarah Sherwood; Design: Sarah Sherwood, Russ Hodge

Contributors: Peer Bork, Richard Copley, Frank Gannon, Lena Reunis, Ann Thueringer, Katrin Weigmann, David Westley

Photographic support: EMBL Photolab

Printed on recycled paper by ColorDruck, Leimen