The Newsletter of the European Molecular Biology Laboratory

EMBL etcetera

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New research centre in Hamburg

A new interdisciplinary research centre to be built on the Deutsches Elektronen Synchotron (DESY) campus shared with EMBL Hamburg is set to pave the way for advances in structural and systems biology.

An official agreement to build the Centre for Structural Systems Biology (CSSB) was signed by Germany's federal minister for education and research Annette Schavan, together with important representatives from northern Germany. Construction is scheduled to begin next year.

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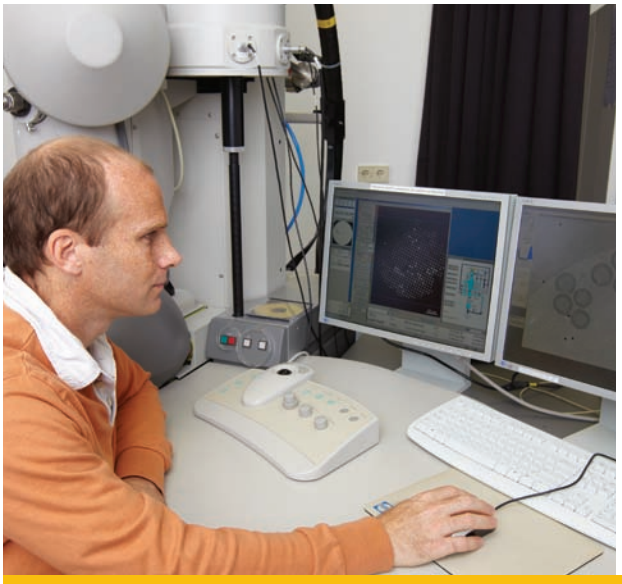
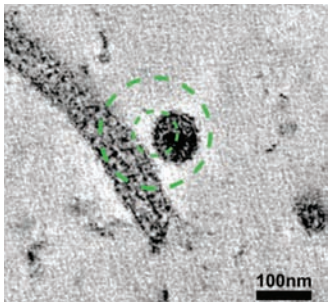
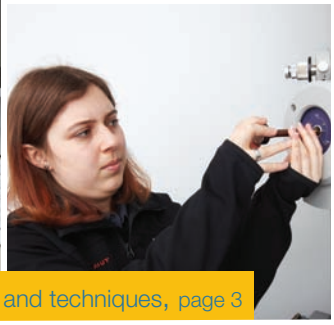
Moving forward in microscopy







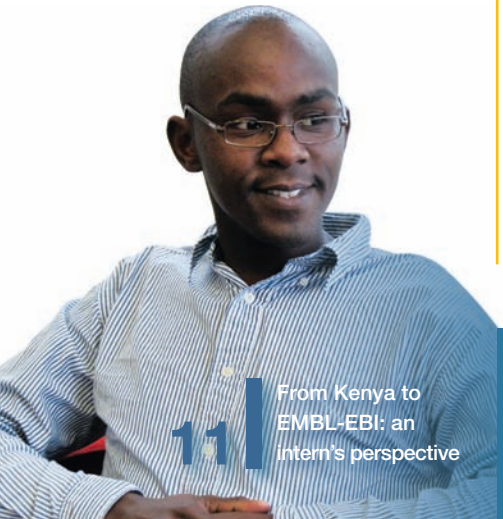
How EMBL researchers are leading the way in technology and techniques, page 3

An eventful year

EMBL Advanced Training Centre now a major hub for life science training

A year on from its grand opening, the EMBL Advanced Training Centre is now firmly established as an important European location for courses, conferences and workshops in the life sciences. The facility, which includes a 466-seat auditorium and 14 additional meeting and events rooms, has been the venue of choice for a significant number of prestigious internal and external events, such as the new joint EMBL|EMBO symposia and this year's Corporate Partnership Programme annual gala event.

Find out more on page 2



Firm foundations for new research centre

Construction of a new interdisciplinary research centre that bridges the gap between structural and systems biology moved a step closer in January.

In the Centre for Structural Systems Biology (CSSB), to be built on the Deutsches Elektronen Synchrotron (DESY) campus shared with EMBL Hamburg, biologists, chemists, medical scientists, physicists and engineers will collaborate to investigate processes at the molecular level.

Interdisciplinary cooperation between universities from across northern Germany, as well as EMBL and the Helmholtz and Leibniz institutes, will enable leading research groups to exploit the current and future ultra-modern radiation sources at DESY for biological research.

During a ceremony on the DESY campus, the official agreement to build the Centre was signed by Germany's federal minister for education and research, Professor Annette Schavan; the Hamburg senator for science, Dr Herlind Gundelach; and the minister for science and culture from Lower Saxony, Professor Johanna Wanka. In total, 50 million Euro has been invested in the project.

Matthias Wilmanns, Head of EMBL Hamburg, underlines what this collaboration means for EMBL: "We will play an active role in the further development of the Centre to attract some of the best researchers from around the globe to Hamburg". Construction of the new facilities is scheduled to begin in 2012.

Celebrating productive partnerships

Members of the EMBL Advanced Training Centre Corporate Partnership Programme convened at the EMBL Advanced Training Centre in Heidelberg for their annual gala event on 20 January.

Managing directors, vice-presidents and other high-level guests from all 15 companies involved in the innovative programme gathered for a reception, followed by scientific talks from EMBL experts and a dinner held in the EMBL Advanced Training Centre Foyer.

"The event gives us a great opportunity to reflect on the positive impact that the programme has, following an important 12 months," says Jörg Fleckenstein, senior manager of resource development.

Companies in the Corporate Partnership Programme, which launched in 2008, provide 100 000 Euro per year in financial support for the EMBL Courses and Conferences programme. A further 100 000 Euro is given in support for travel fellowships, enabling students and young scientists to attend events that they would otherwise be unable to.

Partners benefit from opportunities such as annual roundtable discussions, collaborations and links that could lead to further projects.

"The Corporate Partnership Programme has a strong momentum and now plays an integral role in fulfilling EMBL's vision to provide the best training to scientists from all over the world," adds Jörg.

Eventful year for advanced training

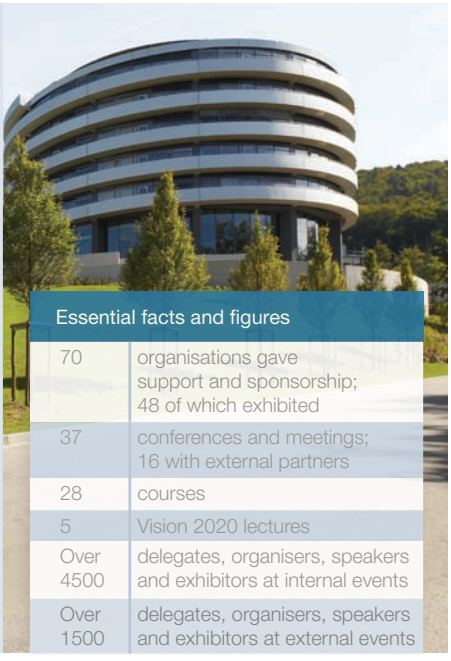
On 9 March the EMBL Advanced Training Centre building at EMBL Heidelberg celebrates its first birthday; but have the preceding three years of planning, building, dust, noise and expectation been worth the wait?

If the latest facts and figures are anything to go by, the answer is a resounding 'Yes!' Since its high-profile opening ceremony, the EMBL ATC has become firmly established as a new European hub for conferences, courses and workshops in the life sciences.

A new marketing team within EMBL's Course and Conference Office (CCO) has been busy promoting the training programme and facilities of the EMBL ATC, succeeding in attracting record crowds.

Capitalising on the EMBL ATC as a new platform for life science learning and conversation, events such as the new joint EMBO|EMBL symposia have helped put Europe more strongly into focus in the world's scientific community as a place where high-quality research and groundbreaking scientific conferences take place.

From 'Making sense of mental illness' to 'Microinjections', this year's line-up looks set to be an equally engaging mix of forward-looking science and up-to-the-minute training. Find out more about events at **www.embl.org/events** and about the EMBL ATC at: **www.embl.de/atc**.



Essential facts and figures	
70	organisations gave support and sponsorship; 48 of which exhibited
37	conferences and meetings; 16 with external partners
28	courses
5	Vision 2020 lectures
Over 4500	delegates, organisers, speakers and exhibitors at internal events
Over 1500	delegates, organisers, speakers and exhibitors at external events

From macroscopic to microscopic teamwork

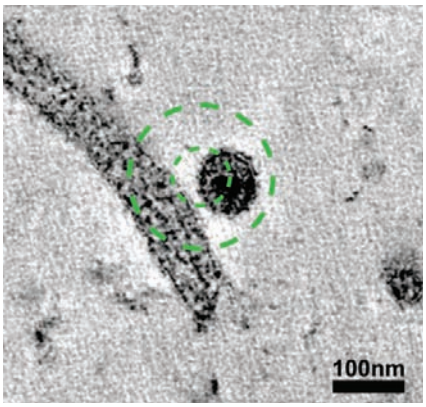
True to the spirit of her EIPOD fellowship, Wanda Kukulski recently combined the best aspects of two microscopy techniques, each used by one of the groups to which she is attached to

Wanda developed a new method, which couples the sensitive multi-colour imaging that is the strongpoint of fluorescence microscopy – used by the Kaksonen group – with the high resolution of electron microscopy (EM) – employed by the Briggs group. The method was published in *The Journal of Cell Biology* on 10 January.

To prepare the samples for imaging, Wanda and her colleagues first froze the samples, embedded them in resin and sectioned them. Before taking any images, they added small microspheres to the sample, which are visible by both kinds of microscopy. These plastic spheres serve as reference points that allow scientists to observe the exact same parts of a cell by both types of microscopy. Thus, the team was able to unmistakably locate rare HIV particles on the surface of mammalian cells.

By using fluorescence microscopy to pinpoint growing microtubules – protein fibres that are part of the cell's scaffolding – and then looking at them in high magnification through EM, the EMBL team showed that those microtubule tips are flared. The new method also enabled the scientists to visualise vesicles in the instants just before and just after they separate themselves from the cell membrane during endocytosis.

This merging of microscopy techniques is set to continue, as researchers look into the possibilities of combining super-resolution microscopy with EM, or integrating cryo-EM with fluorescence microscopy.



The researchers combined florescence microscopy with electron microscopy to locate individual virus particles at the surface of the cell. The above image shows the use of electron microscopy in the technique

Software puts microscopes on autopilot

If the thought of sitting down at the microscope for another 14 hours today makes you want to run out screaming, then new software created by EMBL scientists and presented in *Nature Methods* could be of significant interest.

The teams of Jan Ellenberg and Rainer Pepperkok at EMBL Heidelberg have developed a computer program called Micropilot that can rapidly learn what the user is looking for, take over this laborious task and then perform complex microscopy experiments.

As the name suggests it allows the microscope to operate like an airplane landing flying on autopilot.

Micropilot is a machine learning-based module that can be rapidly trained by the user to automatically identify cells of interest based on their properties in the microscope image.

When Micropilot has found the right cell, the system switches to a customised imaging mode that carries out more complex functional imaging experiments.

"It is not just finding something of interest to the researcher, but automatically carrying out complex workflow afterwards," says Jan. "People are spending less time on the microscope doing things that are repetitive and more time analysing data that is generated without human bias and in a statistically significant number of replicates."

Jan and Rainer have used the software for several different types of microscopy experiment to investigate aspects of cell division in their own labs. In just four nights of automatic operation it detected 232 cells in two rare stages of cell division and carried out complex imaging experiments on them. It would take a researcher at least one month of full-time work on the microscope to attain the same results.

The software will play a key role in the progress of important large-scale European systems biology projects, such as Mitosys and SystemsMicroscopy, to generate dynamic proteomics data from living cells.

But any predictions of a new generation of robotic scientists taking over the lab are wide of the mark. "If you want to come up with exciting ideas and hypotheses, we still rely on bright people," says Jan. "The software simply helps you to obtain high content data automatically, so you can work on pathways and networks rather than individual molecules using cell biological and biophysical approaches. It still takes human scientific creativity to come up with models that turn the data into knowledge."

Micropilot is available as open source code on the EMBL website: **www.embl.org**, search 'Micropilot'.

Zooming in on the nanoscale

A new state-of-the-art electron microscope will enable scientists in Grenoble to stay competitive at a global level in key areas of research.

The 2.35 million Euro FEI Tecnai Polara microscope – funded through collaboration between EMBL, Gis IBiSA, CNRS, CPER and regional contributors – allows scientists to zoom in on macromolecular complexes at the nanoscale and visualise them in 3D. The technology also facilitates electron tomography, enabling high-resolution images of tiny objects such as mitochondria.

Research carried out using the microscope, which is based at the Institute of Structural Biology in Grenoble, will enhance scientists' understanding of the function of different structures, and could prove particularly important in health research.

The microscope is available for use by both internal and external researchers.

Photo: IBS (CEA/CNRS/UJF)-O.Kaïkati

Members of the funding organisations meet at the inauguration ceremony

Seminar inspires groundbreaking collaboration

A pink seminar provided the spark for collaboration between EMBL scientists that has led to groundbreaking research into the role of protein modules that can identify chemical modifications on tiny bits of nucleic acid. Generally referred to as small RNAs, these snippets of information are central to many gene expression pathways.

Ramesh Pillai of EMBL Grenoble and Teresa Carlomagno of EMBL Heidelberg joined forces to understand how cells pick out a particular type of small RNA, known as Piwi-interacting RNA (piRNAs), and load them into Piwi proteins – factors responsible for maintaining genome stability in germline cells.

Scientists understood early on that piRNAs are distinguished from other small RNAs by the presence of a chemical mark at one end, but efforts to capture an image of a Piwi protein recognising it using advanced crystallography techniques in Grenoble proved difficult. So Ramesh turned to nuclear magnetic resonance (NMR) expertise in Heidelberg. Research published in *Structure*, led by Bernd Simon in Teresa's group, revealed subtle yet crucial differences in structure to other small RNA-binding proteins, showing why Piwi proteins bind to piRNAs, but not to other small RNAs.

"I met up with Teresa after my pink seminar in Heidelberg and it was clear that a collaboration could be very productive," says Ramesh. "There are slight differences that you cannot make out from sequence alignments, but these structural differences actually contribute to specific recognition of the chemical mark in piRNAs. This enables the cell to pick out piRNAs from the other small RNAs and bind to the Piwi proteins."

Understanding this mechanism could have important implications for research in genome stability and the groups are already looking to the next stages of the research. "We have set out new directions and applied for an interdisciplinary postdoc to work between our labs," Ramesh adds. "The next step is to identify how the cell marks only piRNAs with this chemical modification, and how this impacts the lifespan of the small RNA in the cell. This should expand and continue this very complementary collaborative project with Teresa."

'Hotspots' identified in human genome

Variety is the spice of life, or so the saying goes; perhaps nobody appreciates this more than EMBL scientists working on the 1000 Genomes Project, having recently revealed a first glimpse of the full spectrum of human genetic variation.

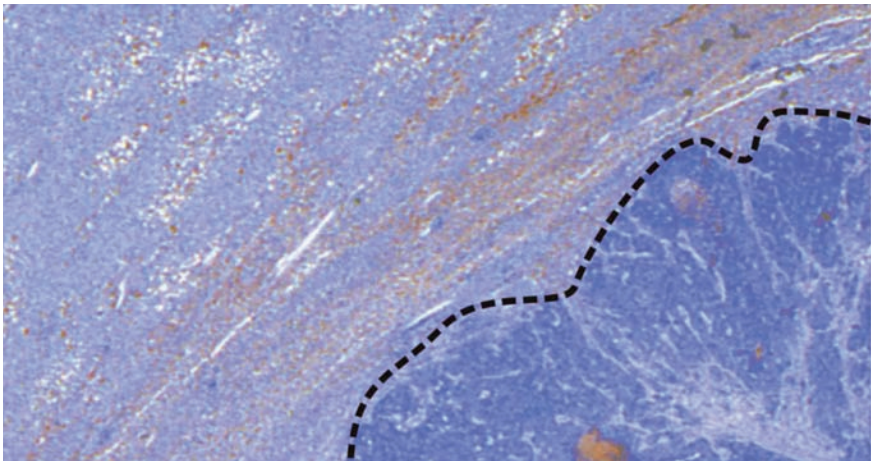
A detailed analysis of data from 185 human genomes sequenced in the course of the 1000 Genomes Project has identified an unprecedented 28 000 structural variants – large portions of the human genome that differ from one person to another.

"Knowing the exact genetic sequence of structural variants and their context in the genome could help find the genetic causes for as-yet unexplained diseases," says Jan Korbel, who led the research at EMBL. "This may help us understand why some people remain healthy until old age whereas others develop diseases early in their lives."

To overcome the challenge of identifying such large and complex DNA sequences, the researchers developed novel computational approaches that allowed them to pinpoint the exact locations of large-scale variations in the genome, broadening the potential scope of future disease studies.

Their work, published in *Nature*, has already identified 51 'hotspots' in the genome, where structural variants are more likely to occur, and which include several regions previously linked to diseases.

Data from this study is publicly available to the scientific community at: **www.1000genomes.org**.



Collaborative research through the MMPU has revealed insights into the link between blood clotting and diseases such as cancer. Here, a metastasis (bordered by the dotted line) invades healthy liver tissue

How cancer cells take advantage of stress

Scientists at the Molecular Medicine Partnership Unit (MMPU) have discovered how stressed cells boost the production of a key blood-clotting factor, thrombin, opening up new possibilities for tackling diseases such as cancer and septicaemia.

Research published in *Molecular Cell* from the MMPU – a collaboration between EMBL and the Medical Faculty of the University of Heidelberg – shows how cancer cells might be taking advantage of our body's stress response to stock pile blood-clotting factors – a mechanism which evolved as our ancestors faced up to daily life-or-death situations.

It has long been recognised that patients suffering from cancer are at higher risk of blood-clot formation and more recently it was identified that people with activated coagulation have a higher risk of developing cancer. But exactly how cancer progression and blood clotting were linked was not understood until now.

"For the first time, we have something in-hand that might explain this enigmatic relationship between enhanced pro-coagulatory activities and the outcome of cancer," says Sven Danckwardt, who led the research within the MMPU.

Matthias Hentze, Associate Director of EMBL and co-director of the MMPU with the University of Heidelberg's Andreas Kulozik adds: "Knowing the exact molecules involved, and how they act, has implications for treatment, especially as drugs are already being tested in clinical studies for other conditions. Those drugs could be good candidates for potential cancer or septicaemia therapies."

ELIXIR funding

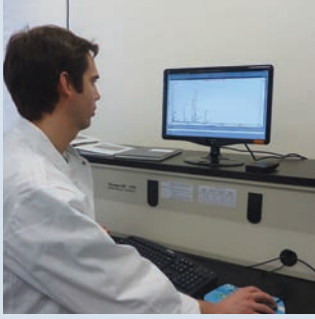
EMBL-EBI and the Biotechnology and Biological Sciences Research Council (BBSRC) welcomed news that funding has been earmarked from the UK's Large Facilities Capital Fund for ELIXIR – the European Life-science Infrastructure for Biological Information – subject to approval of the business plan of the UK government.

ELIXIR is a pan-European initiative that aims to operate a sustainable infrastructure for biological information in Europe. It will provide public access to information to support life science research and its translation to medicine and the environment, the bio-industries and society.

This project, if approved, will allow the construction of ELIXIR's central hub at EMBL-EBI in Hinxton, which will co-ordinate a network of nodes distributed throughout Europe.

BBSRC has already contributed 10 million pounds in funding towards the establishment of ELIXIR. The UK's Medical Research Council, Natural Environment Research Council and Wellcome Trust also support ELIXIR. In addition, Denmark, Finland, Spain and Sweden have already committed funds towards developing the ELIXIR infrastructure.

Professor Janet Thornton, Director of EMBL-EBI and coordinator of ELIXIR, said: "This support from the UK Government lays the foundation for ELIXIR. This is the first step towards building a distributed infrastructure for biological information throughout Europe. By providing public access to the wealth of knowledge generated by the global research community, we will empower researchers in academia and industry to solve some of society's most pressing problems.".



Bench to beamline at Hamburg

In Hamburg, the EMBL@PETRA3 project is nearing the start up of operation and its team is confident that it can begin to welcome users in the first half of 2011. The integrated facility will be centred around the future beamlines at the PETRA III synchrotron storage ring on the DESY campus in Hamburg, and enable future users access to an integrative package of structural biology services all under one roof.

Alongside the three synchrotron radiation beamlines, the EMBL@PETRA3 facility will include laboratories for sample characterisation using biophysical methods, an automated pipeline for high-throughput crystallisation, and software services for automated processing of X-ray data.

The high-throughput crystallisation facility has been serving the general user community since 2005. Last summer, the facility was moved from the other side of the DESY campus to its new home in building 48e, adjacent to the PETRA III experimental hall. The head of the facility, Jochen Müller-Dieckman, and his team are now well established in their new labs and offices and are already realising the benefits of the move: "We can interact closely with the other platforms installed here and ultimately work towards our goal of a more effective and efficient user service."

Next door, the Meijers lab has recently been established for sample preparation and characterisation. "Sample preparation for structural studies is still considered a specialism," explains Rob Meijers. "We want to create an open platform for cell biologists to obtain structural and biophysical information on their favourite systems. We will analyse each sample that enters the crystallisation facility and the new Bio-SAXS beamline; such analysis can directly help with the interpretation of data."

The close proximity of all platforms within the integrated facility has also led to new opportunities for interaction: "The ultimate aim is to create a pipeline from bench to beamline where users enter with their cell lysate or media and leave with a structural and biophysical understanding of their samples."

Access to the crystallisation facility is free of charge under the Advanced Infrastructure Initiative P-Cube (**www.p-cube.eu**), sponsored within the European FP7 programme. Application requires a brief project description, which is evaluated by a transnational access board.

Further information can be found at: **www.embl-hamburg.de**.

Admin @ the lab

13th EMBL Administrators' General Assembly, Heidelberg, December 2010

Over three days, administrators from all EMBL sites had the opportunity to attend a presentation by Ralph Martens of EMBL Administration's Strategic Plan, as well as listen to Helke Hillebrand, Julia Willingale-Theune, Gabor Lamm and Suzanne Beveridge present EIPP, ELLS, EMBLEM and EMBO respectively.

During the dinner, representatives of the British community (including Keith Williamson, Mark Green, Julie Mace, Jonathan Jones, Tom Ratcliff and Brian Nsonga) had the audience on their feet after a performance of their very own pantomime version of Cinderella, a British Christmas tradition.

The third day was mostly occupied by 'Admin @ the Lab' an initiative organised thanks to Darren Gilmour and Francesca Peri, where administrators had the opportunity to get first-hand experience of laboratory work as well as a deeper understanding of science.

Five mini lab tours were also organised thanks to the kind contributions of Christoph Müller, Carsten Schultz, Edward Lemke, Alexander Aulehla, Maja Köhn, Vladimír Beneš, Bruno D'Orazio, Beate Neumann, Sigrid Miles, Vladimír Beneš, Stefan Günther, Romain Gibeaux, Aino Järvelin and Christoph Meyer.

-Anna Efstathiou

Continued support for innovative lecture series

As it reaches its tenth anniversary year, the Heidelberg Forum - Biosciences and Society has double reason to celebrate, as Manfred Lautenschläger – the founder of insurance broker MLP – pledged continued financial support of the highly successful lecture series for another three years.

Established in 2001, the forum lectures bring personalities from within the world of biosciences to Heidelberg to debunk myths, answer questions and discuss their science in a language understandable to all. The initiative, unique in Heidelberg, involves collaboration between EMBL, the German Cancer Research Centre (DKFZ), and the Medical Faculty of the University of Heidelberg. Talks are followed by open discussion and an informal reception, and are free for everyone to attend.

Manfred Lautenschläger's significant contributions to the series has enabled stimulating lectures from leading figures in the life sciences, including Nobel laureates Christiane Nüsslein-Volhard, Elizabeth Blackburn, David Baltimore, and Harald zur Hausen. The events are hosted at the Print Media Academy in downtown Heidelberg.

"The science and society forum has become something of an institution," says Halldór Stefánsson, EMBL Science and Society programme manager. "It is a very effective way of bringing about direct contact between practicing scientists, leaders from within the biosciences and members of the public. Manfred Lautenschläger's continued support is crucial in ensuring the continuation of this valuable platform as it enters into its second decade."

Lectures are held at Heidelberg's iconic Print Media Academy

Forthcoming events

19 May: **Volker Sommer, Professor of Evolutionary Anthropology,** University College London

8 November: **Sir Paul Nurse, President,** the Royal Society

'Not an immunologist? You should be!'

As scientists at EMBL Monterotondo convened in January for an EMBL Distinguished Visitor lecture by immunologist Alexander Rudensky, they suspected they were about to witness something special. Alexander is renowned for both captivating and engaging his audiences – and in his talk he did not disappoint.

Focusing on the molecular mechanisms involved in medical problems such as infection, tumours and immune deficiencies, he addressed the development and function of CD4 and T-cells – crucial in the establishment and healthy function of the immune system. Alexander's group – based at the Sloan-Kettering Institute in New York – contributed to the identification and catagorisation of a key transcription factor in these cells, known as Forkhead box protein P3 (FoxP3).

The Distinguished Visitor lecture series forms an important part of EMBL's science communication ambitions, with experts at the forefront of interdisciplinary fields travelling to EMBL sites to deliver talks relating to key parts of their research.

Participants took part in informal discussion sessions, including lunch with Alexander, where he discussed scientific theories, ideas and – for any despairing molecular biologists – career options. As one participant joked: "I am sorry I am not an immunologist," he replied: "I am sorry for you too, you should be"…

-Luisa Luciani

Fellowships call

The Postdoctoral Office is pleased to announce that in 2011 there will be two calls for applications for the EMBL Interdisciplinary Postdocs (EIPOD) fellowships.

The first call is open from 20 January until 20 March with interviews scheduled to take place at the end of May. The second call will run from 1 July until 15 September with interviews being held at the end of November.

The fellowships are funded by EMBL and a Marie Curie Action Cofund Grant from the EU, and provide young scientist with three years of secured funding. Successful candidates will pursue interdisciplinary projects, transferring techniques to a new context or connecting scientific fields that are usually separate, across at least two labs at the five EMBL sites. Applicants are invited to propose an interdisciplinary project according to their scientific interest or may select from a set of predefined research projects.

For more information and to apply online please visit: **www.embl.org/eipod**.

JKA winner has the write stuff

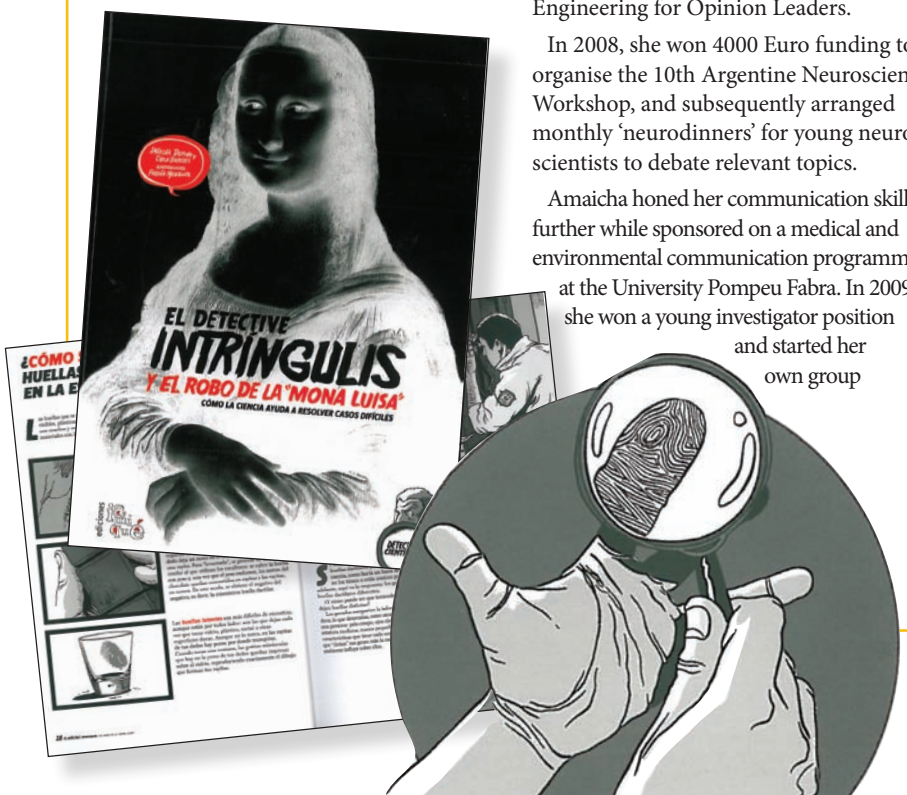
'Publish or perish' is the mantra for many young researchers, but it was publishing of a very different kind that helped earn Amaicha Depino the John Kendrew Young Scientist Award for 2011.

Since completing her EMBL postdoc in the Gross group at Monterotondo (2004–2006), Amaicha has, with limited resources, created a mouse behavioural facility, published six peer-reviewed neuroscience articles, and taught at the University of Buenos Aires. But it is her success communicating science to audiences including Argentinian children, rural poor, politicians, journalists and her own neuroscience colleagues that won her this year's award.

'My grandmother the lettuce'

In 2009 Amaicha won first prize in a national science communication contest organised by ArgenBio for her educational story *My Grandmother the Lettuce*, which illustrated basic concepts of agrobiotechnology. This was later illustrated and published to be distributed for free to science teachers.

Amaicha has since been commissioned by publishing company Iamique to write a series of books for children explaining forensic science, beginning with the publication in 2010 of *The detective Intringulis and the theft of the Mona Luisa*, which explains the concepts of twins and their fingerprints, the physiology of lying, and the science of art authentication.



Committed to communication

Amaicha's interest in writing about science began as a student: "Being the only scientist in my family, and only the second generation to study at university, trying to explain to friends and family what I was studying made me realise the difficulties in communicating this specific knowledge. So, as a student, I began writing articles about science."

"When I went to EMBL, I learnt about all the different efforts made by the laboratory to communicate science," reveals Amaicha. "Some scientists consider it a waste of time, some journalists consider that scientists are not properly prepared for writing, so seeing that EMBL made efforts to communicate its science was really encouraging."

> "It would be nice to see the whole science community take the communication of science as their responsibility, shared with teachers and journalists."

From pen to pipette

Amaicha's list of achievements is impressive. In 2007 she helped give Argentinian journalists, politicians and businessman a 'hands-on' introduction to biology and genetics in the first Workshop on Genetic Engineering for Opinion Leaders.

In 2008, she won 4000 Euro funding to organise the 10th Argentine Neuroscience Workshop, and subsequently arranged monthly 'neurodinners' for young neuroscientists to debate relevant topics.

Amaicha honed her communication skills further while sponsored on a medical and environmental communication programme at the University Pompeu Fabra. In 2009, she won a young investigator position and started her own group investigating animal models of autism at the Institute of Physiology, Molecular Biology and Neurosciences, CONICET – Faculty of Exact and Natural Sciences, University of Buenos Aires.

Spreading the word

"This recognition will help me keep doing what I'm doing: fostering the development of more science communication projects and the involvement of more scientists in these projects," says Amaicha of receiving the John Kendrew Award. "It would be nice to see the whole science community take the communication of science as their responsibility, shared with teachers and journalists."

"I also hope it will help me in my aspiration to foster international collaborations in science communication between Argentina and Europe, by helping me put collaborations in motion, including the exchange of ideas, projects and efforts."

Amaicha will be visiting EMBL Heidelberg on Lab Day (Friday, 10 June, 2–3pm) to receive her award from Nobel Laureate, Sydney Brenner. She looks forward to the opportunity to meet with EMBL staff then. To contact Amaicha regarding scientific and/or science communication collaboration, email: **amaicha.depino@gmail.com**.

Get on board with the Alumni Association

In September this year the EMBL Alumni Association will be holding its three-yearly board elections. The process will be conducted online, and candidates will comprise continuing and new board members who may serve for a period of three to six years in total. If you would like to represent alumni interests by joining the board, or know of a fellow alumnus/a who would be suitable in this role, we would be delighted to hear from you. Please contact us by Friday, 27 May at: **alumni@embl.org**.

Who are we looking for?

Ideally, the EMBL Alumni Association board should be representative of the whole alumni body in gender, nationality, geographical location, EMBL functions, Units, and outstations, as well as post-EMBL careers and working sectors. In particular, the current board would like to see more female members.

Your role as a board member

It is the role of the board to meet twice a year in rotation at Heidelberg and an outstation to manage alumni association business. This includes:

- reviewing memberships, accounts, fundraising, local chapter meetings, reports from working groups, progress of running projects and initiatives
- planning get-togethers and reunions
- discussing new initiatives and projects
- providing feedback from other alumni for consideration.

The current deputy Chair of the Alumni Association board, Niovi Santama, Associate Professor at the University of Cyprus, sees this position as a fantastic opportunity not only to give back to an institution which played such a significant role in her formative scientific training, but also to stay in touch with current developments in the Laboratory. "I very much enjoyed the boundless creativity and ideas of the board members. With the support of the Alumni Office, and in true EMBL spirit, these ideas were quickly transformed to action. It was very rewarding to see the materialisation of the John Kendrew Young Scientist Award, the Matti Saraste memorial garden, the Alumnipedia and the various reunions, local chapter meetings and get-togethers."

Deputy Chair of EMBL Alumni Association, Niovi Santama

For more information on the board, please visit: **www.embl.de/aboutus/alumni/aboutus/board**.

Join us in Vienna this September

the EMBO meeting 10–13 September 2011

The big event in the EMBL alumni calendar this year is *The EMBO Meeting* in Vienna from 10–13 September.

The EMBL Alumni Association has always enjoyed the privilege of holding its get-togethers at these meetings, both under ELSO and now EMBO since 2009. What's particularly exciting about the event this year is that it will be hosted in Vienna – the city where the current EMBL Alumni Association Chair and EMBO Member, Giulio Superti-Furga, is Director of the Center for Molecular Medicine (CeMM).

Giulio Superti-Furga

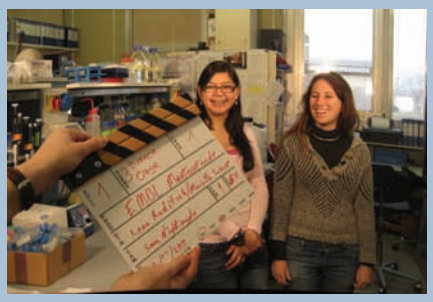
Giulio will act both as speaker at *The EMBO Meeting* on 12 September and host of the alumni get-together at the CeMM on 13 September (transport will be organised from the conference to the CeMM). He hopes to use this opportunity to bring together EMBL alumni working in Austria as well as EMBL staff and alumni attending the conference.

What makes this conference unique in Europe is that there is something of interest to everyone, says Barry Dickson, Scientific Director of the Vienna Research Institute of Molecular Pathology (IMP) and one of the three organising committee members of *The EMBO Meeting*: "The broad scope of this conference has allowed the organising committee at EMBO to select topics and speakers across the entire range of the molecular life sciences." For a full programme and speaker list, please visit: **www.the-embo-meeting.org**

Barry Dickson

Giulio encourages all EMBL staff and alumni who have considered visiting *The EMBO Meeting* in the past, to come now while it's hosted in Vienna: "The city – ranked by the Mercer Survey last year as number one worldwide in terms of quality of life – is well worth a visit!"

Other alumni speakers at *The EMBO Meeting* include Asifa Akhtar, Freddy Frischknecht, Marino Zerial, Eric Wieschaus and Julius Brennecke.



Lights, camera, action!

The tables were turned on EMBL Monterotondo recently, when it became the model for a series of short promotional videos. The film crew (colleagues from Photolab and the Office of Information and Public Affairs) were invited by Cornelius Gross, Deputy Head of Outstation, to interview a cross-section of the Monterotondo community on topics ranging from life as an EMBL predoc to the sevices of the Core Facilities. Look out for the new video showcase, online soon.

Innovative new lab design

As part of the continuing redesign of some laboratories at EMBL Heidelberg, the Ellenberg lab has adopted an innovative new architecture that addresses the increasing need for experimental researchers to have a good environment for computational work. The new design delivers flexible use of benches in wetlab space on the one hand and desks in dedicated areas for computer-based research on the other. By using an open design with transparent interior separators, the architecture supports team work by allowing good communication between, as well as within, the wet and dry space.

EMBL on air

Have you ever been asked to explain a technique in layperson's terms, or to put your research in the context of 'the bigger picture'? EMBL Explore, a new series on the website, employs a combination of podcasts, written articles and visuals to bring such information to life. Each edition explores a different topic related to EMBL science, complementing existing 'Research' and 'News' webpages.

Aimed at the general public, EMBL Explore also appeals to scientists' natural curiosity, exploring the sounds and voices of the lab and uncovering little-known facts. Did you know, for instance, that cryo-electron microscopy (cryo-EM) sample preparation was invented at EMBL? Or that 15 February 2011 marked 10 years since the first draft sequence of the human genome were published? In the third edition, online soon, EMBL graduate and communications intern Corinne Kox investigates some of scientists' best friends: model organisms.

You can find EMBL Explore at **www.embl.org/explore**.

Helping job-seekers get on the right track

On 22 January, the Johnson Indoor Track at MIT Boston was buzzing with activity, but sports fans would have been surprised to find job-seekers, not athletes, competing to get ahead at the European Career Fair.

EMBL, which was present at the fair as part of the EIROforum framework, led the pack of eight European intergovernmental research organisations. More than half of all visitors to the stand sought information about jobs opportunities at EMBL, including the PhD and EIPOD programme.

The European Career Fair at MIT is a recruiting event that connects European employers from science and technology, industry and academia with the most talented candidates from the US.

EMBL was also represented at 'Careers in International Organisations and EU Institutions' at the German Ministry of Foreign Affairs in Berlin on 29 January. Some 1800 interested candidates attended the event and EMBL's stand again appealed to prospective PhD students and trainees.

Both fairs were a success in communicating to a global audience the excellent research and training opportunities available across EMBL.

How did the Picasso fish get her stripes?

It is a question that could easily be the subject of a Rudyard Kipling just-so story. But like the leopard and his spots, the answer remains largely a mystery and, for Nobel laureate Christiane Nüsslein-Volhard, one of the most important puzzles in biology.

"How do you get these colour patterns?" she asks. "You sit there and stare at these beautiful creatures and you wonder why they are like that. Where do these cells come from? How do they arrange? How did it evolve? No one knows."

Christiane visited EMBL Heidelberg to deliver a Vision 2020 lecture on the development of colour patterns in fish, research that has important implications for our understanding of organ formation, growth and cell migration.

As one of the pioneers in revealing how genes regulate the development of animal embryos, Christiane became only the tenth woman to win a Nobel Prize in the sciences. Warm and direct, she works earnestly to improve the status of women in the profession.

"Many women are excellent scientists, but too many others do not see the benefit of having their own success," she says. "Women have many choices in contrast to men; every possibility or choice can interrupt or slow down their career in some way."

With an award from the UNESCO-L'Oreal Women in Science Programme, Christiane set up her own foundation which, unusually, offers grants to young women scientists for housekeeping and babysitting.

"We support those who have already decided that they want to follow the path of a career in science," she explains. "We want to make their life easier. Women often do not have much money or time and they should be encouraged in pursuing their career."

It was sheer determination that enabled Christiane to overcome such barriers and conduct her own groundbreaking research in *Drosophila* at a time when there were few female leaders in science.

"People were working in developmental biology, asking for morphogens and how patterns arose. No one knew anything, and I decided to do genetics in order to find out," she explains.

The research brought her to EMBL Heidelberg, where for two years she shared a lab with fellow Nobel laureate Eric Wieschaus. "We worked incredibly hard," she recalls. "We were in the lab every Saturday and Sunday. Eric lived nearby and he brought a bag with rice and some stew. On Saturdays I brought in a cake. When we arrived we had our own projects, but we were both fascinated by mutants. We designed our project and we took our chances."

For young researchers today, her advice is: think creatively. "Are the questions you are asking worth answering?" she asks. "Many people focus too much on what they know already. I think one should sit back and think: 'what is it that really interests me?' and then follow it."

Christiane's own creativity reaches far beyond the lab. Her repertoire includes a renowned chocolate cookbook and she is a talented musician. "Sometimes when I come to give a talk, I think: 'Can't I just sing instead?'" she smiles. "I have singing lessons regularly. I dearly love music and I find it very important to sing."

For more on the EMBL Vision 2020 lectures, go to: **www.embl.org/vision2020**.

Women share a chemical moment in time

On 18 January, scientists from EMBL-EBI and the Wellcome Trust Sanger Institute shared pivotal moments in their research careers as the International Year of Chemistry (IYC) gets underway. 'Women Sharing a Chemical Moment in Time', a link-up event connecting women scientists all over the world via Skype video, was the first of many celebrations marking the 100th anniversary of Marie Curie's Nobel Prize for Chemistry.

The event welcomed 16 women, each of whom spoke for a few minutes about their own careers and how they have been inspired by pioneers in the field. The presentations were scientifically interesting, and underscored the profound influence of role models and mentors on early career choices. The event was a huge success and will be followed up by informal lunch gatherings on the Genome Campus.

To learn more about IYC, visit: **www.chemistry2011.org**.

Out of Africa

icipe's Christian Borgemeister outlines the importance of a joined-up approach to insect control

A quick scan of the news might give an impression of significant progress in malaria control in sub-Saharan Africa. But unless radical steps are taken, the impact of the disease could become even more devastating, warns Nairobi-based entomologist Christian Borgemeister.

"There have been phenomenal success stories in malaria reduction in Africa, but a potential catastrophe in the waiting," says Christian, who heads up the International Centre of Insect Physiology and Ecology (icipe). "The world is embarking on a very narrow control strategy that is possibly heading in the same direction as DDT, which as part of an anti-malaria approach in the 1950s was successful in the short-term, but in the long-term a spectacular failure."

Christian, visiting Heidelberg to deliver an EMBL Forum lecture on the role of science in poverty alleviation in Africa, is endearing yet direct. He urges a joined-up approach that recognises the complex challenges in controlling disease transmission from insects, and the dangers of over-reliance on insecticides to which insects could become resistant, or have little impact on preventing or curing the illness.

"There has been no functioning pharmaceutical approach to African sleeping sickness," he says. "It is frequently diagnosed as malaria, treated as malaria and people die of it. Drugs developed in the '40s are still administered, have atrocious side-effects and today would probably be eliminated after ten minutes in the screening process."

icipe looks to develop methods and technologies to understand insects' behaviour and biology and then devise simple but effective control tools. Importantly, their approach – which focuses on human, animal, plant and environmental health – recognises that there is no silver bullet.

"You need to base trapping technology in the community from the start," says Christian, pointing to environmentally friendly tsetse-fly control technologies (to combat diseases such as sleeping sickness and nagana) and inter-cropping systems such as 'push-pull' which employs flora and fauna to both repel and draw pests away from crops.

"With push-pull, you have multiple effects that on the one hand protect your crops from important biotic constraints and on the other improve soil quality and give an additional yield boost," he says. "This is a technology where there has been a lot of very good basic and applied science, but at the same time we have 250 000 people in the area around Lake Victoria that have had their lives completely transformed by it."

> "It is challenging to keep Africa's brightest in Africa... and even harder to get them back.."

Like in European institutions, scientists at icipe write papers, file patent applications and train young scientists. But unlike in the developed world, researchers must cope with challenges such as conflict, drought and non-existent infrastructure.

"In Europe you do not envisage problems when you plug your laptop into the socket, but in Kenya the stability of the electricity supply is a major issue, as is water, security, road infrastructure, access to scientific equipment, you name it," says Christian.

And a violent election period in 2007 made things even tougher. "In just three days, Kenya's reputation collapsed like a house of cards," he says. "Once you have lost your reputation for stability, it is hard work to regain it and we are still experiencing the repercussions of this. It is challenging to keep Africa's brightest in Africa – and even harder to get them back." Yet against a background of poverty and political instability, Christian points to signs of progress, following years of disinterest and disinvestment.

"There has been a renewed commitment, both from the international community and African governments to investing in both healthcare and agriculture," he says. "Organisations such as the Gates Foundation play a very significant role and have totally changed the landscape in malaria and so-called 'neglected diseases'. African governments are making concrete pledges on agriculture reform."

And icipe's research is playing an increasingly important role in establishing solutions to these challenges, as the institution seeks to address the disparities that undermine progress in its work in more than 30 countries in Africa.

"There is little in terms of scientific capacity in East Africa for emerging issues such as climate change and infectious diseases," says Christian. "The chances you will find exquisite intellectual and laboratory capacities in Helsinki for emerging infectious tropical diseases such as Chikingunya are infinitely higher than from where those diseases actually come. We are looking to build up this kind of capacity and infrastructure to focus on increasingly important 'climate-change driven' diseases as a key priority for the next five to ten years."

Techniques such as 'push-pull' seek to reduce the devestating impact of insects such as silk moths

From Nairobi to Hinxton: An intern's perspective

Nelson Ndegwa shares his thoughts, ideas and inspirations following a year working at EMBL-EBI

From a single protein…

It is typical for many science graduates in Kenya – like in many other developing countries – to end up taking non-science related jobs, as few science opportunities exist. As an African student halfway into my master's degree in bioinformatics, thoughts of where to carry out my project were of great importance, as few labs in Africa incorporate bioinformatics into their research.

A course held in Nairobi by EMBL-EBI's Bert Overduin prompted me to apply to the EBI and I was delighted when team leaders Rolf Apweiler and Henning Hermjakob offered me an internship – it was perfect! Putting faces to the names of authors I had only read in publications was a humbling experience, and the EBI is the greatest assembly of bioinformaticians I have ever seen working in a single institute.

The many seminars and lectures offered on the Genome Campus have been a source of inspiration and have deepened my appreciation for how rapidly what we know in biology evolves as new insights emerge. And there have been a few surprises along the way – a visit to the EBI's immense data centre was a jaw dropper. It got me daydreaming of the day when we have an African Molecular Biology Laboratory - but I take comfort in knowing that EMBL was not built in a day.

To reactions…

Whatever my personal contribution to science, I believe I can be part of a chain reaction that inspires other Africans to discover new ways to help Africa tackle its myriad problems. I am always on the lookout for opportunities that may give my colleagues a better chance, and have found them in the most unexpected places. For example, a simple campus 'for sale' list frequently

Nelson (left) taking a well-earned break with team leader Henning Hermjakob

announces specialist textbook giveaways. This would be unthinkable even for standard textbooks in established African universities. My undergraduate knowledge of bioinformatics was gleaned from a short, two-paragraph presentation by my lecturer. His expertise was likely gained entirely from a Wikipedia entry. Access to the internet was, and still is, expensive, and the library had no books on bioinformatics (or computational biology), so we could not look deeper into the subject ourselves.

So, together with EMBL-EBI alumnus Nils Gehlenborg, we conceived the Rithi Kitabu project (Swahili for 'to inherit a book'), which collects textbooks donated by EMBL-EBI staff, the Sanger library (which is shared with the EBI) and selected publishing firms and sends them to the Regional Student Group (RSG) of Eastern Africa. One of five regional student groups in Africa for bioinformatics, it is linked by a member mailing list called 'BioinfoAfrica', which also recieves a weekly digest of papers of interest. It is remarkable how an idea inspired by a simple 'for sale' list could transform the careers of people thousands of miles away.

RSG Eastern Africa approached the EBI to explore ways that EMBL research and services could be made more accessible to scientists in Africa. Together with the EBI's Vicky Schneider and Giulietta Spudich, we successfully applied for a Bioinformatics Roadshow, held in Nairobi at the beginning of March, with experts attending from Kenya and a number of other African countries.

This is just one of a number of exciting initiatives involving EMBL researchers in Africa. For instance, a week-long course to take place in September – 'Next generation sequencing for Africa' – will address the emerging need to train researchers in the region.

To pathways…

Africa, like many other developing regions, may or may not have much to offer the EMBL community right now. But it is dedicated programmes such as internships, PhD studentships and visiting-scientist exchange programs that will upgrade the research environment in developing countries. The effect is not simply to empower individuals to do better work, but has a ripple effect in the academic community. Inspired research can benefit African scientists and tackle Africa's grand challenges, and can in turn inspire the work of scientists in developed countries. If I have learned one thing it is that knowledge can be gained from anywhere, given the right motivation and insight.

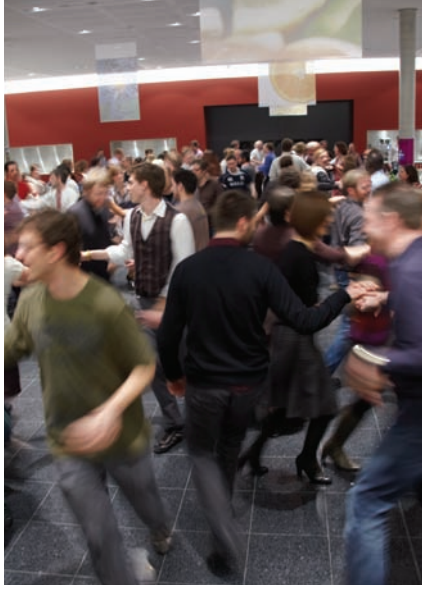
EMBL-Oz comes to EMBL-EBI

In January, EMBL-EBI enjoyed its fourth visit from representatives of EMBL Australia.

Peter Scott and Gavin Graham of the University of Queensland spent two weeks with Rodrigo Lopez's development team and others to learn more about how the EBI integrates its vast and varied resources.

"It has been a really great knowledge-sharing experience," Gavin commented. Together with their European counterparts, the team is working to establish a network of long-term relationships so that developers can exchange lessons learned and best practices.

"We are looking forward to taking advantage of the same services our European counterparts share," said Gavin. EMBL Australia expects to roll out its first computational services within the month.



Piping in the haggis

EMBL's traditional Burns' Night celebration took place in Heidelberg at the end of January. Guests enjoyed food, music, dancing and poetry at EMBL's longest running party, which celebrates the life of Scottish bard Robert Burns. As the sound of bagpipes played out around the new canteen, a menu of 'Scotch Broth' (lamb and vegetable soup), haggis and 'bashed neeps and champit tatties' (mashed turnips and potatoes) was served and speeches and toasts made. Guests then took to the dance floor, where those brave enough were expertly choreographed in Scottish country dancing, much to the delight of their instructors – and of onlookers who preferred to extend the evening's whisky tasting session.

Clockwise from top: The band performs traditional music; Master of Ceremonies George Reid leads in the haggis; guests take part in Scottish country dancing; the top table; EMBL predoc Ana Zhu impresses fellow dancers; more bagpipes; sampling a range of single malt whiskies

newsinbrief

- EMBL Associate Director, Matthias Hentze, gave the President's Lecture at the Sanford-Burnham Medical Research Institute, California, in January. He is one of a number of distinguished guests who have been invited to share their research at Sanford-Burnham, one of the fastest growing research institutes in the US. Matthias spoke about his current research into 'REM networks', RNA enzymes and metabolites, and the progress of the Molecular Medicine Partnership Unit, led jointly with Heidelberg University. He also took the opportunity to tour the Sanford-Burnham campus and get together with current postdoctoral fellows.

- Registration is now open for the following EBI hands-on bioinformatics training courses, designed to help you make the most of your data: EBI-Wellcome Trust summer school in bioinformatics 2011, 20–24 June (registration deadline: 28 March), and 'Programmatic access to biological databases (Java)', 9–13 May (registration deadline: 9 April). To register and for further programme details visit **www.ebi.ac.uk/training/handson**.

- EMBL's *Research at a Glance 2011* publication is now avaliable to view online at: **www.embl.de/aboutus/communication_outreach/publications**. Alternatively, pick up a copy from the Office of Information and Public Affairs, or order one free of charge from **info@embl.de**. As always, the edition provides a comprehensive and insightful overview of the research happening at EMBL.

- Fancy trying your hand at a bit of translation? *Science in School*, the EMBL-based European journal for science teachers, is always pleased to hear from non-native English speakers willing to translate articles from English for the website, **www.scienceinschool.org**. You'd be helping teachers in your own country get the most out of the journal, which features cutting-edge science, interviews with scientists and teachers, teaching activities and much more. Visit the website or contact Eleanor Hayes or Marlene Rau at **editor@scienceinschool.org** for further details.

- Reminder: Staff are eligible for special offers on registration for conferences held at EMBL. For the latest offers and to register contact the Conference Office at: **conferences@embl.de**.

events@EMBL

14 March EMBL Monterotondo
EMBL distinguished visitor lecture: What fruit flies teach us about RNA silencing. Phillip Zamore, UMASS Medical School, USA

14 March EMBL Heidelberg
EMBL distinguished visitor lecture: Engineering Immunity against HIV. Pamela Bjorkman, Howard Hughes Medical Institute, USA

15 March EMBL-EBI
EMBL-EBI open day

17-20 March EMBL Heidelberg
EMBO|EMBL Symposium: Seeing is believing – Imaging the processes of life

18 March EMBL Heidelberg
Staff Association General Assembly followed by the Clubs Fair

25 March EMBL Monterotondo
EMBL distinguished visitor lecture: Duplication, disease and the evolution of the human genome. Evan Eichler, University of Washington, USA

30 March EMBL Heidelberg
Vision 2020 Lecture Series: Infectious agents linked to the causation of human cancers. Professor Harald zur Hausen, German Cancer Research Centre

6-7 April EMBL-EBI
Heads of Units/Senior Scientists Meeting

11 April EMBL Heidelberg
Science and Society Forum lecture: Science and Democracy: Questions, challenges and experiments. Alan Irwin, Copenhagen Business School, Denmark

5-8 May EMBL Heidelberg
Sixth International Congress on Electron Tomography

10 May EMBL Heidelberg
Vision 2020 Lecture Series: Learning about the origin of life from efforts to design an artificial cell. Jack Szostak, Harvard Medical School, USA

For more details about these events and more, visit **www.embl.org/events**.

people@EMBL

Péter Lénárt, a new group leader in the Cell Biology and Biophysics Unit at EMBL Heidelberg, works on cytoskeletal dynamics and function in oocytes. Péter completed his PhD at EMBL and the University of Heidelberg, and undertook postdoctoral research at the Institute of Molecular Pathology (IMP) in Vienna. He has been a Staff Scientist at EMBL since 2008.

Christophe Lancrin is a new group leader at EMBL Monterotondo. He gained his PhD at the Université Pierre et Marie Curie in Paris and undertook postdoctoral research at the Paterson Institute for Cancer Research in Manchester, UK. Christophe and his group will be studying the haemogenic endothelium: a key stage in the generation of the first blood cells.

Zeynep Dinsi joins EMBL Heidelberg as personal assistant to the Associate Director Matthias Hentze. She has 10 years' experience in supporting senior management, and a degree in Communication Management. Zeynep comes from The Hague where she worked at the Ministry of Foreign Affairs and the International Criminal Tribunal for the former Yugoslavia. She also worked at EMBO in 2005.

Pauline Conlon joins EMBL Heidelberg as Human Resources Officer. She has more than five years' international HR experience and a degree in Business Studies from the University of Ulster. Pauline joins the Generalist Team from a similar position in London. She finds one of the most 'enjoyable' aspects of living in Germany to be changing lanes on the autobahn!

awardsandhonours

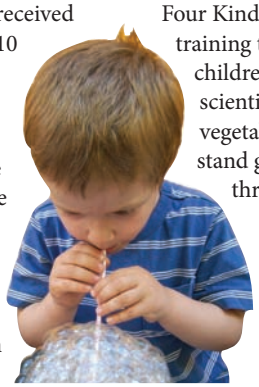
Orsolya Barabas, group leader in the Structural and Computational Biology unit in Heidelberg, has received Hungary's Prima Primissima Junior Award. This prestigious national prize of 7000 Euro, nominated by the Hungarian Academy, is awarded in areas ranging from science to sport, in recognition of talent and early career achievements.

EMBL graduate **Linda Schuldt** has been awarded the Wilma-Moser prize for her PhD thesis 'Structure determination of enzymes from the lysine biosynthetic pathway in Mycobacterium tuberculosis'. The prize of 5000 Euro is awarded for 'outstanding' dissertations, and recognises the special efforts and research of young scientists.

Kinderhaus award for making science child's play

The EMBL Kinderhaus recently received the 'Forscherstation-Plakette' 2010 – an award reviewed annually in recognition of commitment to early science education.

The plaque was presented by the Klaus Tschira Centre of Excellence for Early Science Education and the Pedagogical University of Heidelberg, a joint project to enable kindergarten and primary school teachers to inspire children through fun science activities.



Four Kinderhaus staff undertook special training to learn ways to engage children in exploring the basics of scientific phenomena: from using vegetables and balloons to understand gravity to exploring the senses through the feel of a feather.

So, if the daily grind is getting you down and you need help rediscovering the wonders of science, you know where to go!

Reuben Ward gets to grips with the physics of liquids

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