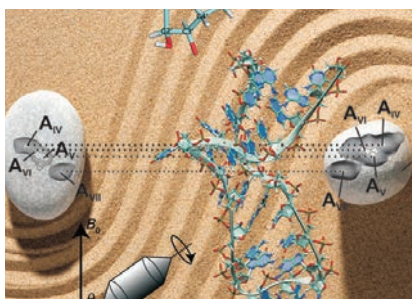


EMBL etcetera

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Guess who?

Researchers in the Carlomagno group at EMBL Heidelberg have taken a step closer to being the first group to solve the structure of an RNA-protein complex using solid-state nuclear magnetic resonance. They devised a new technique that allowed them to identify the nature of different atoms in the complex by asking a series of intelligent questions relating to the signals detected. While solid-state NMR is emerging as the technique of choice for studying membrane proteins, it has rarely been used to look at the RNA part of an RNA-protein complex – which carries out a variety of tasks within the cell.

See page 6

Talking heads

As conference season gets in full swing, get the lowdown on some very special events involving researchers from EMBL



Life science and lasers, page 2



Northern lights, page 3



Science meets policy, page 4

EMBL's PhD Programme turns 30

From professors, to editors, to research scientists: meet the class of '83

Since its inception three decades ago, EMBL's International PhD Programme has provided an exceptional platform for young researchers to launch careers in the life sciences. Its core characteristics – internationality, mentoring and independence – remain, and today it is one of the most competitive programmes of its kind in the world. The Alumni Relations Office catches up with Stella Hurtle, now an Editor of *Science* magazine, and takes a look at the year book from when it all began.

Find out more on page 8



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Don't trust your instincts!



The future's bright

More than 300 structural biologists and technology developers gathered in Hamburg from 8–11 September for the 11th International Conference on Biology and Synchrotron Radiation (BSR). Organised by EMBL, it was the first time that this triennial event has been hosted by an international laboratory dedicated to research in the life sciences.

The principle aim of the BSR conference series is to bring biologists together with scientists involved in the development of synchrotron and laser sources and infrastructures. “Reflecting the spirit of our laboratory, we expanded the scientific scope of the conference to include both methodological developments and exciting biological applications,” says senior scientist Dmitri Svergun,

EMBL-organised event connects life science with synchrotron and laser sources

co-scientific organiser alongside Matthias Wilmanns, Head of EMBL Hamburg. The programme covered ongoing developments in established methods and new emerging trends, including a special session dedicated to hybrid structural biology applications that exploit complementary techniques. “The

“Hamburg’s scientific environment is a unique and remarkable constellation.”

– Keith Hodgson

programme was broad, but this didn’t diffuse the focus,” observes speaker and participant, Bente Vestergaard of University of Copenhagen. “As well as the historical perspective, we

gained an understanding of future opportunities: this framed the importance of this event and the BSR conference series overall.”

During the meeting, more than half the conference participants took up the chance to tour the integrated ‘bench to beamline’ facilities operated by EMBL Hamburg at the high brilliance PETRA III synchrotron ring. “Hamburg’s scientific environment is a unique and remarkable constellation,” says speaker and chair, Keith Hodgson of the Stanford Synchrotron Radiation Laboratory, “Nowhere else is a collection of technologies aligned so well.”

The conference was a true cross-EMBL effort, with the scientific organisers ably assisted by a team led by Margret Fischer, senior administrative officer at EMBL Hamburg, and Diah Yulanti, conference organiser at EMBL Heidelberg. During the event it was agreed that the next BSR meeting would take place in Stanford, USA, in 2016.

Honouring the career of Fotis Kafatos

Friends and colleagues past and present convened together with former EMBL Director General Fotis Kafatos in June for a symposium honoring his diverse and distinguished career.

There was laughter, celebrations and even tears at the event at Imperial College, London, as participants reflected on the scientific achievements and on personal memories of a man who has had a significant influence on the advancement of molecular biology both sides of the Atlantic.

Fotis’ rare ability to bring together people, ideas and disciplines was highlighted in four distinct talks by Harold Varmus (National Cancer Institute, USA), Helga Nowotny (President, European Research

Council), Jules Hoffmann (Strasbourg Institute for Advanced Studies), and Iain Mattaj (EMBL). They explored his role in the development of numerous departments, institutions and partnerships, while also leading his own research group studying the mosquito *Anopheles gambiae*.

Fotis is renowned for working voraciously towards three goals during his years at EMBL (1993–2005): excellence, inclusiveness and cooperation. It was a progressive time, with the establishment of the Developmental Biology Unit at EMBL Heidelberg and the Mouse Biology Unit in Monterotondo, as well as the conversion of the Data Library into EMBL-EBI. He was also a driving force behind the development of core services, industry collaborations, training, outreach, and pan-European research initiatives.

“Fotis made a significant contribution to EMBL, establishing two new units, expanding PhD training and introducing the partnership scheme – but he is also very approachable,” says Iain Mattaj. “The human aspect is very important to him and in this spirit it was striking to feel the warmth that came across during the event and impressive to see the collection of prominent attendees with whom he has interacted.”

Sex in science

Yes, the name is designed to get your attention! Internationally, female scientists are represented in diminishing proportions as career levels progress – and significant numbers of women leave science altogether. But the issues that cause this well-recognised “leaky pipeline” now affect both men and women in science.

This October, EMBL-EBI and the Wellcome Trust Sanger Institute, an EMBL partner, launched a new website for their Sex in Science programme. The programme offers more than just a series of talks: its purpose is to drive policy and practice changes to redress issues traditionally facing women in science.

www.sanger.ac.uk/workstudy/sexinscience





Up North!



Three steps forward

It is emerging as a formidable force for European science: ELIXIR, the European Life Science Infrastructure for Biological Information, added the signatures of the UK research community and Sweden to its consortium agreement to move two steps closer to becoming officially established.

On 4 September, the Biotechnology and Biological Sciences Research Council (BBSRC) signed the agreement on behalf of the UK bioscience research community. Then, on 24 September, Sweden, who will also host a national node of ELIXIR, became the second nation to ratify the agreement, which will make ELIXIR a formal legal entity when another three countries sign.

The infrastructure has a shared hub based at EMBL-EBI, and will link up centres of excellence across Europe. ELIXIR will support European science by connecting and opening up access to biological data, analytical tools and scientific literature.

“Through this agreement, BBSRC is showing its commitment to a successful response to the informatics opportunities that are available, in order to achieve maximum scientific impact for the benefit of us all,” says Douglas Kell, BBSRC Chief Executive.

“The need for data storage and for expertise in bioinformation science is expected to increase even more, and this in turn requires good research infrastructure in order to avoid bottleneck effects – European researchers must cooperate to be able to handle the increased data volumes,” explains Juni Palmgren, of the Swedish Research Council.

⇒ On 18 October, France became the latest country to commit to the first formal, but non-binding steps towards the implementation of ELIXIR by signing a Memorandum of Understanding. Sixteen countries have now signed the MoU.

EMBL's Nordic partners gather to communicate, collaborate and connect

Representatives from EMBL and its four Nordic partners met at the Oslo Science Park from 17 to 19 September, for the annual meeting of the Nordic EMBL Partnership for Molecular Medicine. Hosted by the Partnership's Norwegian node, the Centre for Molecular Medicine Norway (NCMM), the event brought together 150 participants, ranging from predocs to PIs, to exchange knowledge and expertise.

Greeting attendees in the opening address, EMBL Director General Iain Mattaj extended a particularly warm welcome to representatives of the Danish Research Institute of Translational Neuroscience (DANDRITE), the Partnership's new Danish node at Aarhus University. Inaugurated in March this year, DANDRITE focuses on conducting state-of-the-art research in the field of neuroscience.

The three-day programme featured 35 presentations, covering a spectrum of topics that reflected the complementary research being undertaken at the partner institutes. EMBL's Stephen Cusack and Jan Korbel were both keynote speakers, while EMBL-EBI's Julio Saez-Rodriguez presented in a session that examined tools for the molecular understanding of disease.

The Nordic EMBL Partnership for Molecular Medicine was established in 2007 between EMBL and the universities of Oslo, Umeå and Helsinki, with nodes at the NCMM, the Laboratory for Molecular Infection Medicine Sweden (MIMS) and the Institute for Molecular Medicine Finland (FIMM). In March 2013 the Partnership celebrated its expansion with a Danish node and the renewal of its agreement for an extended period of 10 years.

Centre of attention

On 4 September, the ground-breaking ceremony for the Centre for Structural Systems Biology (CSSB) took place on the Deutsches Elektronen-Synchrotron (DESY) campus, just a stone's throw from EMBL Hamburg. The idea behind the creation of the CSSB is to complement the already world-leading synchrotron and forthcoming free electron laser infrastructures on the DESY campus with broad, top-notch research activities focusing on structural biology in connection with infection biology and emerging system biology approaches. As one of the nine partners who joined together to set up the Centre, EMBL will continue to have close ties to the new institute, not least through the creation of a joint CSSB-EMBL research group.

The development of new facilities at the CSSB along with the proximity of the existing facilities on the DESY campus will enable scientists there to use a variety of interdisciplinary techniques to analyse biological samples. As well as housing new research groups dedicated to the growing fields of Structural and Systems Biology, the CSSB building will offer significant lab space to external visitors, a lecture hall and seminar rooms.



During a visit to mark the first step in the construction of the CSSB, German Federal Minister for Research, Johanna Wanka – joined by senior representatives from local government and academia (top) – met beamline scientist, Michele Cianci at the EMBL@PETRA3 facilities (bottom)



Faculty of ideas

Setting the perfect scene for networking and idea sharing, around 120 faculty members, staff scientists and support service staff from across EMBL gathered in Hamburg for this year's faculty retreat, which took place 13–14 September.



In addition to talks by established scientists, three new group leaders detailed their projects. EMBL-EBI's Sarah Teichmann gave an overview of how genetic regulation influences T-cell differentiation, while Pedro Beltrão, who has also recently joined the outstation, looked at how genetic variations can give rise to new protein interactions and phenotypes during evolution. EMBL Heidelberg newcomer Yannick Schwab, who heads up the Electron Microscopy Core Facility, described how his research team use correlative light and electron microscopy to study how tumour cells invade blood vessels.

On the services front, EMBL Grenoble's José Marquez presented the new beamline instrumentation equipment developed by combin-

ing the expertise of Hamburg and Grenoble scientists, while Andrew McCarthy provided a sneak-peek of the developments expected on beamlines jointly managed by EMBL and ESRF in Grenoble.

Iain Mattaj presented ongoing efforts to implement a professional research information system to efficiently and accurately list publications by EMBL scientists, the plans for EMBL to become an early-adopter of ORCID – which provides each researcher with a unique digital identifier – as well as new time-keeping requirements from funding agencies. Iain also unveiled exciting plans for upcoming celebrations in 2014 – a year of milestones: EMBL-EBI's 20th Anniversary, EMBL's 40th Anniversary and EMBO's 50th Anniversary.



EMBO Meeting: broad exposure to big ideas

The EMBO Meeting 2013 took place in the lively and lovely city of Amsterdam, with more than 1000 participants, 600 posters, and almost 100 speakers spanning all areas of the life sciences. The buzzing 'marketplace' of posters and exhibitors featured interactive sessions (such as an EMBO's ideas competition for the scientific paper of the future) and the lure of enticing freebies (such as Olympus' handmade sushi on the spot!).

The conference kicked off with a keynote lecture from EMBL veteran Kai Simons (group leader for 25 years in Cell Biology & Biophysics, Head of Unit from 1982–8), who looked back on his career in science – “Everything keeps getting bigger,” he marvelled – and presented his research on lipid rafts in cell membranes. Other talk highlights included NASA astrobiologist Chris McKay, who gave an update on the search for extraterrestrial life – “The public already knows there's other life in the universe – science just needs to catch up” – and discussed NASA's plans to grow *Arabidopsis* plants on the moon. EMBL Heidelberg's Peer Bork presented his group's latest research on the human gut microbiome.

Anne Glover, Chief Scientific Advisor to the President of the European Commission, spoke with EMBO Science Policy Programme Manager Michele Garfinkel about the role of science in policy making. “The main challenge is getting the evidence that we generate to have an impact on citizens,” she said, appealing to scientists for their help.

Thijn Brummelkamp, a young researcher at the Netherlands Cancer Institute in Amsterdam itself, was presented with the EMBO Gold Medal by none other than Nobel Laureate Sir Paul Nurse. The award was given in recognition of his achievements in accelerating the genetic analysis of human disease, including the development of a widely used method for the permanent inactivation of large numbers of genes in mammalian cells.

Stefano Bertuzzi, Executive Director of the American Society for Cell Biology, led an engaging session about postdoc positions, arguing that they function more as 'holding tanks'. His suggestion that the 'postdoc track' could benefit from more rigorous criteria, such as admissions committees, sparked an animated debate.

– Raeka Aiyar



Top: A large number of delegates took time to speak with EMBL representatives at the lab's stand. Bottom: Anne Glover discusses the interplay of science and policy

CERN for molecular biology?

Ewan Birney, Joint Associate Director of EMBL-EBI, examines the similarities and differences between EMBL and CERN

This September I visited CERN again, this time with a technical delegation from the EBI to meet with their 'big physics data' counterparts. Our generous hosts, Ian Bird, Bob Jones and several experimental scientists showed us a great day, and gave us an extended opportunity to understand their data flow in detail.

CERN is a marvellous place, and the experiments conducted there share some similarities with large-scale biology projects: the large-scale data flow, the many stages of analysis, and the need for solid metadata. But the differences between high-energy physics (HEP) at CERN and molecular biology at EMBL are considerable. For example, the LHC data is about one order of magnitude larger than molecular biology data – though our data doubling time (~1 year) is shorter than their basic data doubling time (~2 years).

“Each data-intensive science will need to adopt, adapt and sometimes create its own custom solutions.”

– Ewan Birney

Another difference is that HEP data flow is more 'starburst' in shape, emanating from a few central sites to progressively broader groups. Molecular biology data has a more 'uneven bow-tie' topology, with thousands of data-producing sites feeding a small number of global archive sites, which distribute to 100 000s of researchers worldwide.

Although HEP is not uniform – the results for each experiment are different – there is a far more limited repertoire of types-of-things one might want to catch. In molecular biology, the incredible heterogeneity of life is simply awe-inspiring. So in addition to data-volume tasks in molecular biology, we also have fundamental, large-scale data-structuring tasks.

What we can learn from CERN

There is a lot more we can learn in biology from HEP than one might expect. Some relates to pragmatic information engineering and some to deeper scientific aspects. There is certainly much to learn from how the LHC handles its data storage, but we should also look carefully at how they have created portable computer schemes.

There is a lot of knowledge we can share as well, for example in ontology engineering. The Experimental Factor Ontology's ability to deal with hundreds of component ontologies without exploding, could well be translated to

other areas of science, and I think they were quietly impressed with the way we are still able to make good use of archived experimental data from the 1970s and 1980s. In molecular biology, I think this on-going use of data is something to be proud of.

Engaging further with our counterparts in HEP is something I am really looking forward to. It will be great to see Ian, Bob and the team at EMBL-EBI next year. CERN is a leader in data-intensive science, but each data-intensive science will need to adopt, adapt and sometimes create its own custom solutions.

➡ For a longer version of this article, visit Ewan's blog, 'Bioinformatician at large': bit.ly/1akFbRR



The Compact Muon Solenoid at the Large Hadron Collider. CERN produces enough data in a year to fill CDs stacked several times the height of Mount Everest

In the presence of greatness

It began with great expectations, and just a sprinkling of nerves. Inspired by the Lindau Nobel Laureate Meeting, the first ever Heidelberg Laureate Forum had set the bar high, aiming to bring together young researchers in maths and computer science with some of the superstars of the fields – and, on 27 September, EMBL Heidelberg hosted the closing day of what was widely hailed as a fascinating week.

Amidst the spectacle of clicking cameras, lively discussions, and rows of personal chauffeurs waiting outside, talks placed strong emphasis on the role that interdisciplinary research could play in the future of computing, and many laureates detailed work that applied mathematical and computational approaches to biology.

The forum, which took place at institutions across the city, brought together 40 recipients of the Abel Prize and Fields Medal (mathematics) and the Turing Award

(computer science), with more than 200 talented young researchers from across the globe. The aim was to emulate for maths and computer science what the Lindau meeting achieves for physics, chemistry and the life sciences, in providing a platform for dialogue between different scientific generations. A number of participants also took the chance to tour the lab and find out more about EMBL researchers working in computer science.

“Many young researchers I spoke with are shifting to look at problems that lie at traditional disciplinary boundaries,” explains Amanda Randels, a fellow at Lawrence Livermore National Library. “The beginning and ending of the forum's scientific programme were absolutely perfect – from Raj Reddy's talk about who invented computing, to John Hopcroft's reflections on the future,” adds Dana Mackenzie, a US-based science writer.



Turing Award Winner in 2003, Alan Kay, shares insights with the next generation of number crunchers



Left to right: Bernd Simon (NMR Facility Manager), Teresa Carlomagno and Alexander Marchanka

Ask the right questions

Scientists at EMBL Heidelberg have moved a step closer to becoming the first group to solve a structure of an RNA-protein complex using solid-state NMR.

The team in the Carlomagno group used a new technique to identify individual atoms in the complex that has intriguing parallels to the popular children's game 'Guess Who?'. In the game, players ask a series of intelligent questions until they finally reveal the identity of their opponent's character. However, the scientists used the method not to identify bearded men or bespectacled ladies, but to answer a whole different set of questions more relevant to atoms that have enabled them to pinpoint their nature depending on the signals detected using solid-state nuclear magnetic resonance spectroscopy (NMR).

The technique, developed by postdoc Alexander Marchanka, allows the group to now look at the distances between, and the whereabouts of, different atoms in the complex: identify these, and they will be able to solve its

structure. "This is the first step," explains Teresa Carlomagno. "If – and hopefully when – Alex solves the structure it will be a major breakthrough. While there have been many studies of membrane proteins by solid-state NMR, no one has ever solved the structure of an RNA bound to a protein using this technology."

The work, published in *Angewandte Chemie* in September, has made use of a new NMR spectrometer installed in the lab in 2011 thanks to generous funding to Teresa from the German Federal Ministry for Education and Research (BMBF). After becoming notorious for setting off a fire alarm while its magnet was charging, the machine – which enables scientists to study very large particles in their solid-state and therefore holds potential for studying RNA-protein complexes – is now making a name for itself for all the right reasons.

Targeting cystic fibrosis

Thanks to a screening technique developed by the Pepperkok team, EMBL scientists and collaborators have discovered a promising potential drug target for cystic fibrosis.

Cystic fibrosis is a hereditary disease caused by mutations in a single gene called CFTR. The only drug currently available that directly counteracts a cystic fibrosis-related mutation, only works on the three percent of patients that carry one specific mutation, out of the almost 2000 CFTR mutations scientists have found so far. But, regardless of which mutation a patient carries, in cystic fibrosis CFTR loses the ability to control the so-called epithelial sodium channel (ENaC): therapies that might act upon ENaC instead of trying to correct the multitude of CFTR mutations could seem like a good option. But unfortunately, the drugs that inhibit ENaC, mostly developed to treat hypertension, don't transfer well to cystic fibrosis.

During their time as visitors in Rainer's team, Margarida Amaral, from the University of Lisbon, and PhD student Joana Almaça, used a high throughput, image-based screen developed by the Pepperkok group to look for a better alternative. They found a gene called DGKi, which in subsequent tests on patient material appears to be a promising drug target. The work, which was a collaboration with scientists at Regensburg University, was published in *Cell*.

Going incognito

For James Bond, Jack Bauer and Nikita Taylor, it is standard practice: cover your tracks. Cells in a zebrafish embryo do the same, researchers at EMBL Heidelberg have discovered, not in the name of espionage, but in order to determine which direction they move.

"We found that the cells at the rear of the group have a 'vacuum cleaner'"

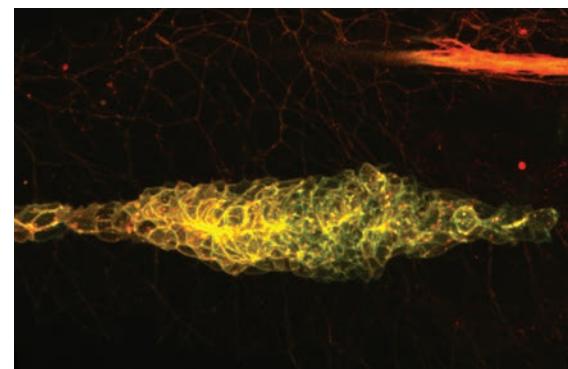
– Erika Donà

To investigate how a group of cells, known as the lateral line primordium, find their way in a developing zebrafish embryo, predoc Erika Donà and group leader Darren Gilmour used a tag developed by Anton Khmelinskii in the group of EMBL alumnus Michael Knop (now at the DKFZ-ZMBH Alliance), which changes colour

depending on a molecule's age.

Until now, scientists had assumed the cells followed a one-way trail: a gradient where cells moved from less- to more-concentrated chemokine. But the EMBL scientists have now found that, rather than being produced outside them, this gradient is actually generated by the cells themselves. "We found that the cells at the rear of the group have a 'vacuum cleaner,'" says Erika. "They suck up the chemokine at the back, but at the front there's still a lot of chemokine to follow, so the cells move forward." Joseph Barry in the Huber group helped develop and apply data analysis methods for this work.

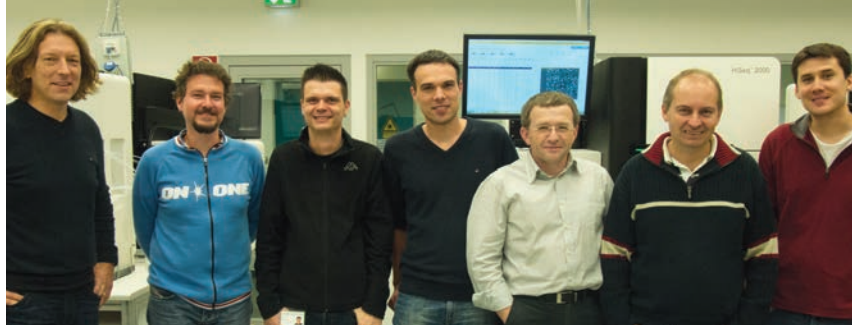
The study, published in *Nature*, could also be relevant to another, seemingly very different type of moving cells: those in metastasising cancers. The molecules studied



A mass of migrating cells in the zebrafish embryo keep to one direction by 'vacuuming' up the path behind them

by Erika and colleagues are known to play important roles in different tumours' ability to metastasise – to spread from one place to another in the body. These findings hint at what those roles might be, and consequently, at possible ways to block them.

Rupert Lück, Michael Wahlers, Andrés Lindau, Tobias Rausch, Vladimír Beneš, Jonathon Blake and Markus Fritz who worked on the project



High performance computing for your NGS data

Since earlier this year, the expanded EMBL High Performance Computing (HPC) cluster – a group of linked nodes processing biological data in parallel – provides access to more than 3500 CPU cores and 32 TB of total memory. Supported by LSF, a new job scheduling system, it enables more efficient processing of the many computing requests the infrastructure receives every day. The infrastructure, developed by IT Services, benefits more than 100 users of the HPC facility. Recently, a big effort was made to improve the overall speed in processing the large amounts of next generation sequencing data produced by EMBL's Genomic Core Facility (GeneCore).

It is a growing problem in sequencing facilities around the world: how do you keep pace with the computing burden arising from the huge expansion in genetic sequencing? Next generation sequencing (NGS) does not produce a complete genome that researchers can read like a book; rather it generates something more reminiscent of a pile of shredded documents without any organisation of the fragments. At GeneCore one solution has come from a combination of more powerful computers and smarter

use of these resources. “The continuous increase of our facility's NGS platform data output meant we effectively needed to put more machines and much more memory for our high throughput bioinformatics pipelines on the job,” says Jonathon Blake, a bioinformatician in the facility. “Migrating workloads to the upgraded cluster has allowed us to clear bottlenecks producing a threefold increase in our processing throughput,” adds Vladimír Beneš, head of GeneCore.

“It has produced a threefold increase in our processing throughput”

– Vladimír Beneš

“By working together with GeneCore staff, including bioinformaticians Tobias Rausch and Markus Fritz, as well as computational experts from many other groups, we have delivered an infrastructure that works: ultimately scientists are able to build upon a much more reliable HPC infrastructure to deliver fast, reliable results in a way that is highly conducive to successful science – at least until the next generation of sequencing machines comes along!” says Rupert Lück, head of IT Services.

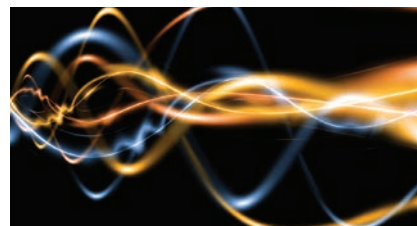
Research highlights

What makes you, you?

A study, conducted by scientists from nine institutes, including EMBL-EBI, presented a map that points to the genetic causes of differences between people. Published in *Nature* and *Nature Biotechnology*, the work offers the largest ever dataset linking human genomes to gene activity at the level of RNA.

Through the noise

Scientists in the Huber group at EMBL Heidelberg have pinpointed key activities in the human genome that are important for the understanding of health and disease. The findings, published in *PNAS* in September, highlight finely tuned, crucial events within a seemingly chaotic landscape.



The 99.9 per cent

The knight in shining armour and the evil dragon are ancient human constructs that have permeated our consciousness for a long time. All too often, we take this dichotomous view and apply it to the world around us. This might explain why viruses are often seen as evil elements of our existence. Marilyn Roossinck, Professor of Plant Pathology and Environmental Microbiology at Pennsylvania State University, would like for this view to change into something closer to “most viruses really rock!”

Marilyn's recent work unveiled a plethora of viruses that have been ignored to date, mostly because they are not involved in causing disease. These viruses are persistent, meaning that they are passed from generation to generation through the seeds of the plants and rarely cause adverse symptoms. Even more striking is the fact that some of them may confer an advantage to the plant they ‘infect’, such as resistance to drought.

A keynote speaker at this year's EMBL PhD Symposium, 21–23 November, Roossinck believes that these mutualistic interactions

can be explained by evolution. Since plants evolve slowly, it will be hard for them to adapt to comparatively fast changes in their environment. Viruses, on the other hand, evolve much faster and “can provide new genetic information for them to draw on”.

Research suggests growing crops as sterile as possible seems to be as damaging as living in sterile environments. As our understanding of the importance of

“Most viruses really rock!”

– Marilyn Roossinck

bacteria and fungi in our environment increases, so should our view on viruses. Roossinck points out that “wild plants are full of microbes: bacteria, fungi and viruses, while crops do not have any”. This seems to confer an advantage to the wild plants, which thrive under the local environment, and is in contrast to crops, which fare poorly. Considering this, she proposes that a way to “ensure a better adaptation of crops to the local conditions is to inoculate them with the microbes found living alongside

their wild counterparts”. In her opinion, this technique could enable crops to thrive in harsh environments, and is unlikely to affect crop yields in a negative way.

It is unlikely that farmers will be buying ‘good virus’ strains to inoculate their crops in the near future. However, as we understand more and more about this previously unexplored biodiversity, we cannot escape the conclusion that interaction with the microbial world is of great importance. Cleaner is not necessarily better!

– Paul Costea



30 years of the EMBL PhD programme

Since the inception of the EMBL International PhD Programme (EIPP) in 1983, some 600 predocs have jump-started their careers at the lab

'Nowhere I've worked since has been so exciting'

Stella Hurtley, Editor of *Science* magazine and one of the EMBL PhD class of '83, talks about what attracted her to the programme and how her stay at EMBL impacted her career.

"I read about the EMBL PhD course on a noticeboard in the Cambridge Biochemistry Department. The offer of a trip to Heidelberg seemed too good to miss. When I got there, I realised EMBL was a place where some of the best science in the world was under way. I had already developed a keen interest in cell biology, particularly in membrane traffic, and fell in intellectual love with Graham Warren (group leader in the Cell Biology and Biophysics Unit between 1977 and 1985).

"Nowhere I've worked since has been as integrated and exciting, and so dedicated to every one doing their best in science with no significant worries about funding. The excitement and commitment of the group leaders and postdocs was inspiring, the number of international visitors wonderful, and the courses great!

"Finally, through EMBL alumna Carol Featherstone, I took a sideways step to become an Editor for *Science* magazine, having pursued my career behind the bench at Yale, Philadelphia and Edinburgh post EMBL.

"I still interact regularly with many of the people I met at and through EMBL, via *EMBL&cetera* and at meetings. I've also seen



some of my class of '83 over the years, and on occasion handled their papers!

"My job now provides me with all the intellectual stimulation I loved about being at EMBL, without the technical frustrations. There are other frustrations though, like having to reject more than 90 per cent of the papers I handle. However, the ability to contribute in some small way to the advancement of science in so many fields is a real honour and a pleasure every day.

"My advice to new PhD students is to follow your passions – science is too difficult to do stuff you don't find truly interesting!"

☞ "This extraordinary legacy provides an infinite source of inspiration as we strive to ensure that current and future generations of PhD students can productively explore and contribute to scientific research, and build their own careers on a head start at EMBL," says Helke Hilbrand, Dean of Graduate Studies, EIPP.

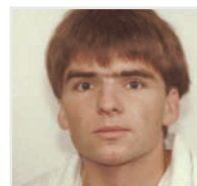
Predoc class of '83



Bénédicte Dargent, now Senior Research Scientist, CNRS



Ernst Stelzer, now Professor, Goethe University, Frankfurt



Horst Mölders, now Senior Director, Roche Professional Diagnostics



Jim Murray, now Professor, Cardiff School of Biosciences, Wales



Margit Burmeister, now Professor, University of Michigan



Michael Hortsch, now Associate Professor, University of Michigan



Robert Weinzierl, now Group Leader, Imperial College, London



Fritz von Weizsäcker, now Chief Physician, Schlosspark-Klinik

Engineering interns become enthusiastic alumni

Since 2009, Ciaran Behan, EMBL Senior Technology Development Specialist, has established and maintained an annual intake of engineering interns from University College Cork (UCC) for the Core Facilities. He returned to UCC on 22 October to interview the next batch of top engineering and computer science students, and to host a small gathering of new intern alumni.

"I'm delighted to see this gain traction," says Ciaran, "Considering that UCC is a partner university, and that the international experience gained at EMBL can be a great career-enhancing opportunity."

"It is clear that returning alumni are doing a great job communicating the benefits of internships at EMBL," Ciaran adds. "Fueled by their enthusiasm and grass roots marketing, we again received applica-

tions from top tier students this year and filled all three intern positions for 2014."

The future looks good, too, as UCC faculty and staff, as well as EMBL alumni are interested in developing further the connections between the institutes. Next year's interns will be hosted by the Merten Group, the Genome Biology Computational Support group and IT Services.

Already seven enthusiastic alumni have been released back into the wild, and at the mini alumni gathering after the interviews, fond memories of EMBL poured out and settled like those perfect pints at The Oval Bar in the heart of Cork city.



Mark your diaries

21 November EMBL-EBI Alumni Association Board Meeting followed by staff/alumni event – Reception at new EMBL-EBI South Building hosting ELIXIR hub, 6–8pm.

18–19 July EMBL Heidelberg EMBL 40th Anniversary Reunion for all – EMBL, EMBO, EMBLEM and EMBL Ventures staff and alumni: www.embl.org/alumni/anniversary.

For further details of events and extended versions of these stories, please visit www.embl.org/alumni.

EMBL exports to the Netherlands

The EMBL Alumni Relations office held its sixth annual reception at The EMBO Meeting on 23 September. More than 30 local alumni, as well as EMBL and EMBO staff and alumni attending the Meeting, gathered for what has become a much-anticipated and enjoyed tradition.

With the largest clusters of Netherlands-based alumni working in Amsterdam and Utrecht, it was little surprise to have a good turn-out from these cities, with a few travelers from the northern outreaches of the country. It was a diverse group in terms of nationality, staff category, EMBL sites and generations. The group included two former Chairs of the EMBL Staff Association and two current EMBL Council delegates, as well as many alumni now at the Netherlands Cancer Institute (NKI), where the largest numbers of alumni in Amsterdam work.

Here, a few alumni share their thoughts on their time at EMBL and what drew them to the Netherlands...

Gerrit van Meer

Now: Professor and Dean, Faculty of Science, Utrecht University; EMBO Member; EMBL Council delegate

Was: Staff Scientist, 1981–7, Simons Group, EMBL Heidelberg

“Since EMBL, I have essentially spent 20 years on research in lipid cell biology in the Netherlands. For me, the country offers the



right mix of top science and informal but respectful relations. People are dedicated to their work yet the atmosphere is relaxed.

“My attitude towards science and scientists was greatly influenced by my mentor and other exemplary scientists and colleagues at EMBL, where I met some of my best friends! I also chaired the Staff Association, which has been useful experience in keeping people in line in my present job as Dean.

“It was great to meet former colleagues at the EMBL alumni get-together. My stay at EMBL greatly contributed to shaping my scientific network, and each meeting with EMBLers past and present reinforces this network – the feeling of being part of an extended EMBL ‘family’ is an added bonus!”

Gerrit with Jop Kind (a postdoc at NKI in Amsterdam) at the alumni reception



A giant art installation at The EMBO Meeting venue welcomes attendees to the city

Anastassis (Tassos) Perrakis

Now: Group Leader, NKI, Amsterdam

Was: Predoc, 1992–5, Wilson Group, EMBL Hamburg; Staff Scientist and Team Leader, 1997–2000, Cusack Group, EMBL Grenoble

“I worked at the NKI between my stays at EMBL Grenoble and EMBL Hamburg. When I was asked to return as group leader, I didn’t have to think twice. There’s a lot of exciting biology here, giving me the opportunity to focus on the ‘why’ instead of the ‘how’, which was the case at the synchrotron.

“We use a strange blend of physics, maths and chemistry to answer biological questions. I like to work on diverse systems, and collaborate closely with people that know the field in terms of biology, as is the case at the NKI.



Tassos, far left, with his group at the NKI

“In my first weeks at EMBL Hamburg, I despaired that I would never learn all the things taken for granted there. This turned to positive motivation and resulted in a work frenzy. In Heidelberg, you could learn more things from one day in the cafeteria than ten hours in the library – I miss that too! For me, EMBL is all about the people, and remains unique in bringing together so many motivating, inspiring and enthusiastic people in a small space.”

Magali Michaut

Now: Postdoc, NKI, Amsterdam

Was: Predoc, 2007, Proteomics Group, EMBL-EBI



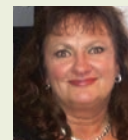
“I went to EMBL-EBI thanks to a Marie Curie fellowship for six months during my PhD, which I was doing in France. My stay was a real push for my scientific life: the highly interactive and dynamic nature of EMBL-EBI was motivating and inspiring.

“At the alumni reception I met several interesting people and even had conversations with NKI colleagues, which was good, since I don’t always take the time to connect with my colleagues, despite meeting in the elevator daily!”

Mervi Lampinen

Now: IT Director, Eenrum

Was: Technical Team Leader, 1994–8, EMBL Core Facilities and Services



“Since EMBL I’ve been working in multiple international companies in senior IT and e-commerce positions. Being a female leader in a very male oriented area (IT) – especially in the Netherlands – has been a challenge.

“The people at EMBL taught me a passion for food and life in general. Although I was there for a relatively short time, I still feel welcome in most parts of the world, with alumni located in every corner.”

‘No innovation without basic research’

Awareness-raising campaign aims to highlight value of EMBL science

In the early 1970s, travel grants from the Volkswagen Foundation helped bring together the people behind the establishment of EMBL. Fast-forward four decades, and across the lab grants, donations and support from private benefactors continue to play an important role in projects that go beyond regular funding streams. With EMBL’s 40th Anniversary ahead of us, Director, Matthias Hentze and Head of Resource Development, Astrid von Soosten are launching a campaign to further this impact, starting with a simple, yet powerful message: there is no innovation without basic research.

Spreading the word

“We want to communicate the value of fundamental research, which is the bedrock of clinical research,” Astrid explains. “Our aim is to build closer ties with executives, corporations, trusts, foundations, interested philanthropists and the wider public. Benefits flowing from basic research play a crucial role in the success of our societies and economies. EMBL – Europe’s only intergovernmental laboratory in the life sciences – is an important part of an endeavour that is laying the knowledge and innovation foundations for tomorrow.”

But simply rattling a tin isn’t enough. “We are trying to build a strategic force and network of friends,” Astrid explains. “We are asking our supporters for strategic advice and aim to forge long-term relationships with newcomers to our network. Because of EMBL’s enormous reach and impact, we can expect to find friends, both close to home and



Astrid heads up the Resource Development team, which is responsible for establishing relationships with donors and coordinating the lab’s flourishing Corporate Partnership Programme

around the world. My team are here to serve all of EMBL – there are tremendous scientific strengths across all sites and units that provide great opportunities for us to rally local troops and encourage them to open their rolodexes on our behalf.”

“Prominence and relevance attract philanthropic support”

– Astrid von Soosten

To realise this, it’s important to get personal. Astrid sees the lab’s cross-site anniversary celebrations, which will include a broad programme of exhibitions, reunions, symposia and matinees, as a springboard to connect with policy makers, business people and interested members of the public.

“Prominence and relevance attract philanthropic support – if more people know about what we do, support in its various forms will naturally become an increasingly rewarding activity,” Astrid explains. “Next to the highly competitive area of cancer research, other topics of our time: aging, biodiversity, neurobiology and rare diseases, for instance, might strike a personal chord with some. Others might be simply inter-

ested in supporting ‘blue skies’ research. The aim is to match individual interests and research goals in a way that is mutually beneficial. This involves putting the supporter’s intention at the centre and exploring areas of shared interest. When we engage in conversations and give people the chance to say what matters to them, we can almost always engage them on our behalf: be it in the form of advice, networking support or actual donations.

‘A participation sport’

“Donors are exceptional people. More often than not there is a story behind their generosity – they are also thoughtful and very capable of understanding the significance of the work going on here,” Astrid adds. “People frequently base their decisions to make a gift on personal experiences. So, it is my job to identify or match the projects that will be suitable for a given donor. Philanthropy is the result of mutual trust and respect and like all good friendships it grows because of the effort we put into making our friends feel appreciated. So, as Matthias once phrased it, ‘building a philanthropic programme is a participation sport and whole team effort.’”



British sign language interpreter Ali Gordon relays an Ensembl course presentation to participant Alasdair Grant

The language of science

For the first time, a British Sign Language (BSL) interpreter joined the instructors at EMBL-EBI to give an in-house course, ‘Browsing the Genome with Ensembl’.

Alasdair Grant, a policy advisor at the UK Department for Environment, Food and Rural Affairs, has a passion to learn bioinformatics. He contacted the course organisers with the request to arrange a BSL interpreter, as he is profoundly deaf. The EBI was happy to help. “I was very impressed by the support offered by EMBL-EBI,” says Alasdair, “The tutors looked after me extremely well.”

The challenge was to find an interpreter who wouldn’t be daunted by all the technical terms. Clarion Interpreting, a UK-based company, was delighted to help. “We under-

stand that clear communication is vital to successful learning, so we ensure that the appropriate support is arranged and provided according to each learner’s individual needs,” says Cheryl Cullen, the company’s Managing Director.

Interpreter Ali Gordon quickly signed terms for splice variants, SNPs, and regulatory regions so Alasdair could receive the same information that hearing students learned from the presenters.

“We were thrilled to be able to support the first BSL interpreter at the EBI, and help Alasdair on the road to becoming one of the first profoundly deaf bioinformaticians,” says Giulietta Spudich, Ensembl outreach project leader.

A new UX-perience

Pinned to a wall of an office at EMBL-EBI is a drawing of a speedboat, some anchors, and lots of sticky notes. Look around and you might find other sketches, flow charts, user profiles, or design ideas. But this is not the studio of a bioinformatician-turned-artist now more interested in the Turner Prize than a Nobel. They are tools that the EBI's user experience (UX) experts use to help software developers build services – with the aim of making them more usable, findable, attractive, and cost effective.

“Analysing how users respond to a website or product involves getting people to give you feedback through exercises or activities. By doing this you can observe how successful they are at using the product, make sense of the data, and identify what can be improved,” explains Sangya Pundir, UX analyst for UniProt, a freely accessible resource of protein sequence and functional information. “If you have evidence, video clips, numbers, and analytics, it takes the conflict out of the decision making process.”

Cue sketches, storyboards, user surveys, focus groups, and other creative tools that aim to guide planning, idea generation, design, development and implementation. “Concepts in UX design may come from fields as broad as psychology, business management and computer science, but unless you are doing pure scientific research, the chances are that you are applying UX in



Sangya, Francis and Jenny are user experience experts at EMBL-EBI

your own work, as was the case for me early in my career,” says Sangya.

UX analysts have been described as coaches, coordinators and chameleons, teasing out ideas, bringing together concepts, and adapting tools in order to realise goals. “Bioinformatics resources often suffer from usability problems – as an advocate of the

“We are bringing ideas from the outside and seeing how they can be adapted to suit the lab's needs”

– Francis Rowland

user, we want to channel what we learn about the users to address these problems,” explains Jenny Cham, UX analyst for the web development team, who have recently completed an overhaul of the EBI's website. “Since the role involves interaction with scientists and software developers, it is important to really enjoy working with

people. My work also draws on my technical background – so I believe that scientific knowledge can be helpful in capturing the requirements of the end user.”

For some, integrating concepts such as ‘user research’, ‘game storming’ and ‘personas’ into the design process is something that can take some getting used to. But more and more people are turning to UX design as a way of enhancing the outcome of their projects. “Because it is new, it is exciting,” explains Francis Rowland, a UX designer who works on interaction design and implementation, “We are bringing ideas from the outside and seeing how they can be adapted to suit the lab's needs. You need to be comfortable perhaps being the only UX representative on a project, and to learn when to hold your ground. In many respects we are consultants for people to come to for advice and guidance for their services. For me, it is a very rewarding career.”

toptips

Run your own course

Interactive, challenging, rewarding and fun: for many EMBL scientists, sharing expertise through courses is an important way of keeping up with the latest developments in science and technology. EMBL Heidelberg's Holger Dinkel and Frank Thommen are amongst a number of EMBL staff that organise courses in their own time – here, they give their top tips to those thinking about starting their own course.



Holger Dinkel (left) and Frank Thommen

- 1 **Identify a need** – A course can provide intense training in a short period of time, demonstrating methods or introducing concepts that participants can go away and explore on their own. In fast moving and interdisciplinary research, they can provide very effective ways of honing skills and demonstrating new concepts.
- 2 **Find great speakers** – Harness the expertise and specialisms around you and where possible draw on skills of other leading figures at the forefront of the field.
- 3 **Create networking space** – Networking opportunities are one of the hidden benefits of courses: new connections can give people contact with others who may be able to help them out in the future.
- 4 **Prepare material** – It is essential to provide resources such as handouts that people can use as a reference in the future.
- 5 **Work in a team** – Courses run on a voluntary basis can be a particular challenge as organisers already have busy and demanding jobs: organisation and teamwork are crucial.
- 6 **Expect the unexpected** – It is rare that everything will run as smoothly as anticipated! Seek advice from others who have experience.
- 7 **Get feedback** – Gathering responses from people can provide useful information for guiding the structure and content of future courses. It can let you know what went wrong and right, so you can make the next course even more effective.

Think big!

Big data, big challenges: this was the gauntlet thrown down to 50 school students visiting EMBL Heidelberg, 7–8 October, for a workshop to apply design thinking to scientific problems. The outcome? Some big ideas.

Under the careful guidance of experts from EMBL and software company SAP, participants from across Baden-Württemberg set about devising ways that technology could help people to learn about, understand and engage with scientific research.

Their challenge was to inject design thinking into science education. Commonly used in the design and planning fields, design thinking aims to match the needs of people with technological innovations and potential business strategies. “They coped well under pressure, and have come up with ideas that, if developed further, could have real value for users,” explains Carsten Becker, of SAP’s Global Universities Alliance.

Final concepts included mobile learning applications, serious games and even a ‘science in your pockets’ project that was aimed at applying a voluntary computing scenario



to the analysis of big data on users’ mobile phones. When developing their ideas, students had to think about issues such as learning methodology, sponsorship, data security, target audiences, while focusing on their group’s specific challenge.

“I enjoy biology a lot – through our project we got to speak with researchers and apply our ideas to interesting design challenges,” explains Jonas Steves, who worked on a concept for a mobile app.



The event, co-organised by EMBL’s Learning Laboratory for the Life Sciences (ELLS) and SAP, aimed to encourage participants to take concepts from business and design and bring them back to how people learn about science

“It was great to see the teamwork and collaboration, not only within but between groups,” adds Rosalie Schwartz a student at Helmholtz-Gymnasium in Heidelberg.

“We will now select the best project idea and develop it into a real application that can be used by students and teachers across Europe”, says Philipp Gebhardt who initiated the project as part of ELLS’ efforts to engage in the development of innovative science teaching resources.

science&society

Don’t always trust your instincts

Philosopher Daniel Kelly, who researches the nature and moral significance of disgust, tells postdoc José Viosca why...

You may disagree with the headline above. Indeed, you could feel well advised in steering clear of the rancid milk in your refrigerator or of the man sneezing next to you in the bus queue. But while disgust initially helped to alert us to potentially dangerous situations, this powerful emotional warning sign has since been hijacked and is used in social contexts to sustain norms and delimit groups. In a lecture at EMBL Monterotondo on 4 October, Kelly argued that disgust is not a reliable indicator of moral wrongness, not least because what is seen as ‘disgusting’ can vary enormously between people and cultures.

What is disgust?

Disgust is a human emotion that is made up of two components that evolved to help us avoid poisons and infectious agents. It is triggered by stimuli that are perceived to be dirty, is characterised by flashes of nausea, and is recognisable by the ‘icky’ facial expressions that the person experiencing it typically shows. However, the emotion has been recruited in the social domain where it plays a powerful and sometimes subliminal role influencing moral social judgements. There is significant cultural and individual variation in

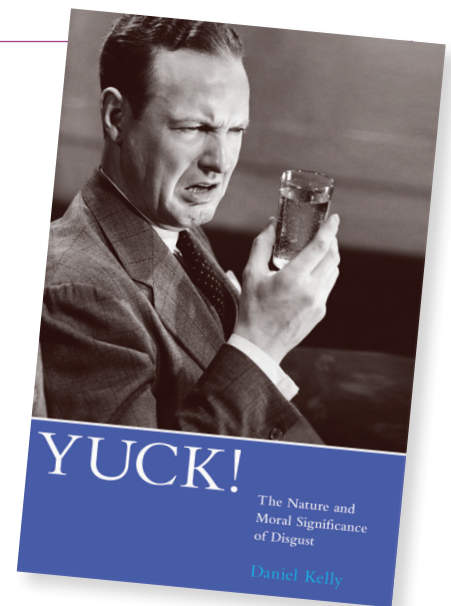
what is seen as disgusting – take for instance how a meat eater and vegetarian might regard a bloody steak. Moreover, it can give rise to false-positives: a chocolate cookie in the shape of excrement is not dangerous at all.

Can our interpretations be dangerous?

When you feel extremely disgusted by someone, this can lead to feelings that dehumanise that person – it becomes easier to treat them badly, or to take away their rights. On one hand, this may seem justified for people that have carried out actions that are morally deplorable today, such as sex offenders or child molesters. But on the other, there are many contemporary and historical examples of a very different kind: people disgusted by the idea of members of different races drinking from the same drinking fountain, or of women in positions of power or behind the wheel of a car. I think such examples show that we should not afford disgust any sort of moral authority.

What can we gain from learning about it?

Biology and evolution illuminates why the emotion is so powerful: from a first person point of view, it is precisely the intensity



of yuck that makes us believe that it must be right. However, by understanding its evolutionary roots and its physiological and psychological mechanisms, it becomes easier to withdraw our credence from our gut reactions. Our brains are wired to respond sharply to dangerous stimuli, and it makes evolutionary sense that the response itself makes us believe there is something genuinely bad about what is disgusting us. But it is well known that occasionally the brain produces artifacts, such as sensory and cognitive illusions. Therefore, we should carefully interpret our subjective intuitions, especially those based on disgust.

Getting personal

Not many medical roles require you to be researcher, policy advisor, administrator and educator at the same time. But Liselotte Højgaard is no ordinary doctor. Ahead of her keynote talk at this year's Science and Society conference, Højgaard reflects on issues affecting the development and implementation of personalised medicine in Europe.

What do you see as the main challenges?

Personalised medicine presents us with the opportunity to deliver healthcare that is more proactive, pre-emptive and preventative. Already, there are examples, particularly in cancer therapy, where detailed information about the biological and environmental differences of individuals has been used to guide the most appropriate treatment. Some have argued that we cannot afford to fund personalised medicine, but there are significant potential cost savings in terms of reducing the risks and expenditure in treating patients, by getting it right first time. If we can present these data clearly, I believe that it will be easier for people to make decisions. Other major challenges are ethical, legal and societal, relating to issues such as data collection, handling and sharing. However, an overarching strategy for Europe is lacking, not least because of a complex mix of national and continental policy frameworks.

How might this change?

Three important drivers are institutions, clinicians and patients. One challenge is to better understand complex biomedical datasets in the context of lifestyle and the environment: here, there is a need for more links between basic research and university medical centres.

Research institutions such as EMBL are in a great position to drive this agenda forward. Secondly, clinicians have an important role in communicating questions that matter most to patients – this can influence how government and industry react. Thirdly, patients today are better informed than in the past and will put increasing pressure on doctors to deliver.

What are your hopes for the conference?

It provides a rare opportunity to take a 'helicopter view' and potentially move the field in a better direction. My experience from working on projects such as the Innovative Medicine Initiative – which aims to speed up the development of better and safer medicines – is that bringing key stakeholders together can help you to be proactive, creative and push forward research in a way that better meets the needs of society.

⇒ The 14th EMBO | EMBL Science and Society Conference: Public and Private Health – Genomics, Medicine and Society, takes place 7–8 November.

Højgaard is Head of Department at Rigshospitalet, Professor at the University of Copenhagen and the Technical University of Denmark, and Chair of the Danish National Research Foundation



New structural biology showcase in Grenoble

As part of the French national Fête de la science, the European Synchrotron Radiation Facility (ESRF) inaugurated its new visitor centre, a 200 m² modular space, designed to welcome more than 3000 visitors each year, host functions and showcase the use of synchrotron radiation in science.



Image courtesy of C. Jarnias (ESRF)

As part of this development, EMBL Grenoble helped design a large exhibit dedicated to structural biology. "Designing this brand new space was hard work," says Dominique Cornuéjols of the ESRF communication Unit. "But the result is worth all the effort: the feedback we've had from the public has been amazing. We're grateful to EMBL Grenoble staff for their willingness to help, and their patience during filming."

It took six months of planning, scouting, writing, designing and filming, to tell the story of how crystallography is helping design new drugs against flu. The result is a 2x3 m curved wall, complete with explanatory panels, hands-on exhibits, and short movies about protein expression and crystallisation, starring EMBL staff. "This project is a good illustration of the integrated way in which we work with our campus partner institutes, and I really enjoyed seeing my work presented in such a sleek, accessible way," says Head of EMBL Grenoble Stephen Cusack.

'Knowledge speaks, but wisdom listens'

To celebrate the French science festival (Fête de la Science), EMBL Grenoble and neighbouring institutes UZHCI, ESRF and ILL, held an open campus weekend 12–13 October.

Nineteen EMBL and UZHCI staff volunteered to welcome more than 600 visitors, eager to get a glimpse of science behind-the-scenes. "It was really motivating to see that so many visitors were interested in what I was showing them, even at the end of a two and a half hours tour of the campus!" says Juan Reguera, a research scientist in the Cusack group, who opened his lab to talk about his research on Bunyaviruses. "Explaining what I do to people from all walks of life, each with their own perspective on science was also an interesting experience."

"Giving non-scientists a sense of what our science can do was a fantastic experience and listening to people's questions, their curiosity was humbling," adds Philippe Mas, a scientist in the Hart team. "It reminded me of something Jimi Hendrix said about how knowledge speaks, but wisdom listens."



Top: Frederic Garzoni of the Berger group shows the lab to Fête de la Science visitors
Bottom: Volunteers at the Open Campus

Nobel legacy

How did the work of the winners of this year's Nobel Prize for medicine or physiology – James Rothman, Randy Schekman, and Thomas Südhof – pave the way for what you do today?



Mum now appreciates what I do

When I heard, I was really excited: after Palade in 1974, another Nobel Prize for research looking at the secretory pathway. Wow! After so many years trying in vain to explain to my family what I am working on, I finally managed to impress them when I proudly announced: "Mum, I had dinner with two Nobel prize winners in July!" COPII proteins identified by Schekman are the building blocks of COPII vesicles and I use them as controls in virtually every experiment. These proteins are essential for secretion of newly synthesised proteins from the endoplasmic reticulum, but even today we still don't know how they are regulated in phases of development, cell differentiation or how they react to extracellular stimuli. I hope to contribute a little bit of knowledge to this field, too.

Fatima Verissimo, research associate, Pepperkok team



Many more questions revealed

This year's prize for physiology or medicine recognised the discovery of the basic principles of cell logistics and understanding in detail how cells organise their transport systems in space and time. While at first it may seem that vesicular transport is very well understood, when one question gets answered many more appear. Some of the most interesting from my point of view studying the structure of vesicles are: how are vesicles built at the molecular level? What changes do proteins undergo to form the vesicle coat? Which principles are fundamental to the vesicle architecture and which are variable to meet the particular requirements of individual cells?

Svetlana Dodonova, predoc, Briggs group



Standing on the shoulders of giants

I met Rothman and Schekman at a Gordon Research Conference. Together with Südhof they have laid the foundation of our current understanding of how cells uptake, transport and secrete molecules. Their work inspired me to study the cellular mechanisms that control the dynamics of membrane composition, structure and function. Anyone who studies membranes today still contemplates questions framed by these giants. While imaging techniques are increasing annually in resolution and speed, automation permits high throughput analysis. Together these tools will likely reveal the spatial and temporal organisation of individual components along the secretory pathway as well as the relationship between protein function and membrane curvature *in vivo*.

Ori Avinoam, postdoc, Kaksonen and Briggs groups

mycity

Kolkata (formerly Calcutta), also known as the 'City of Joy', is my hometown. As it just hosted the famous 'Durga Puja' festival this autumn, I thought of giving you all a glimpse of my city. Even with its imperfections, it is truly, for me, the city of joy.

Menorca Chaturvedi, Diploma Student, Genome Biology Computational Support

Clockwise from top left: Performances based on the songs (called 'Rabindra Sangeet') of Rabindranath Tagore – a great poet, author, freedom fighter and Nobel Laureate who is fondly remembered by the city – are an integral part of all cultural events; Howrah Bridge is a famous symbol of Kolkata and has featured in several movies; the city's biggest annual festival is Durga Puja – people go 'Pandal' hopping during the four main days of the celebration, visiting the many spectacular decorative tents (pictured bottom right) that house idols (pictured bottom middle) of Goddess Durga and her family; a sunset on the banks of the river Hooghly, captured by a friend



Kolkata, India



Pablo Joubert, Andrew McCarthy, Jelger Lycklama and Catarina Silva: Staff Association reps at EMBL Grenoble



MEP Franziska Katharina Brantner, pictured with Director of International Relations Silke Schumacher, on a visit to EMBL Heidelberg



The Staff Association hands over a 5300 Euro cheque to the Wald Piraten Camp raised during this year's Summer Party



More than 50 EMBL Grenoble staff and families enjoyed a 'day out at the park', which included a BBQ and football tournament



Staff at EMBL Heidelberg during the lab's Oktoberfest celebrations on 19 October



Participants from the ChEMBL group at EMBL-EBI, ahead of London's Big Fun Run, running in aid of Cancer Research UK

newsinbrief



- ⇒ Member of the European Parliament Vicky Ford visited EMBL-EBI in September to learn more about the work of the outstation. Pictured above: Louisa Bellis, ChEMBL group; Janet Thornton, EMBL-EBI Director; Vicky Ford, MEP; Ewan Birney, Associate Director; Paul Kersey, group leader; Niklas Blomberg, ELIXIR Director.
- ⇒ Delegates from EMBL Council visited the Centre for Genomic Regulation (CRG) in Barcelona on 11 October, to get a first hand impression of the location of the future Spanish EMBL

outstation. Organised by Carmen Vela, the Spanish Secretary of State for Research, Development and Innovation, the meeting brought together policy makers and representatives from CRG and EMBL. The proposed outstation would look to capitalise on existing expertise, skills and technology platforms developed in the current EMBL-CRG partnership unit in areas such as novel 3D imaging and modelling of multicellular systems.

- ⇒ EMBL-EBI staff and UK-resident alumni gathered in Cambridge in September to reprise a successful reconnection event first held last year. Alumni from Heidelberg, Hinxton, Grenoble and Monterotondo were present, with Alan Sawyer holding the record for his length of service over two sites. EMBL-EBI will host this year's Alumni Association Board meeting, and alumni are invited

to attend a drinks reception at the new EMBL-EBI South Building, home of the ELIXIR Hub, at 6pm on 21 November. If you would like to attend please email alumni@embl.org.

- ⇒ Every year, EMBL-EBI groups are invited to present talks and posters to their colleagues. This year's EBI Day was beautiful: the sun was shining, the talks engaging and the posters real conversation-starters. Speaker topics ranged from how bioinformatics is transforming the medical domain (Ewan Birney, Associate Director) to what EMBL is doing to recruit and retain excellent female scientists (Sue Lee, head of Human Resources at EMBL-EBI). New research group leaders Pedro Beltrao and Oliver Stegle gave an overview of their work, while others reviewed EMBL-EBI's various services, how they are used and how they can be improved.

events@EMBL

3–5 November EMBL Heidelberg
EMBL Conference: Cancer Genomics

5 November EMBL Grenoble
Distinguished Visitor Lecture: Katharina Strub, University of Geneva, Switzerland

7 November EMBL-EBI
EMBL-EBI Open Day

7–8 November EMBL Heidelberg
14th EMBO | EMBL Science and Society Conference: Public and Private Health – Genomics, Medicine and Society

8 November EMBL Monterotondo
Distinguished Visitor Lecture: The regulation of stem cell self-renewal, Sean Morrison, University of Texas

11–15 November EMBL-EBI
Joint Wellcome Trust/EMBL-EBI Course: Proteomics Bioinformatics

19 November EMBL Heidelberg
Distinguished Visitor Lecture: Control of plant stem cell fate by a peptide, Hiroo Fukuma, University of Tokyo

21–23 November EMBL Heidelberg
The 15th EMBL PhD Symposium: Competition in Biology: The Race for Survival, from Molecules to Systems

26 November Im Neuenheimer Feld 440
12th public MMPU Research Day

29 November EMBL Monterotondo
Distinguished Visitor Lecture: Circuits for Motor Control, Thomas Jessell, Columbia University

2 December EMBL Heidelberg
Distinguished Visitor Lecture: Evan Eichler, Department of Genome Sciences, Howard Hughes Medical Institute

2–6 December EMBL Heidelberg
EMBL Master Course: Chemical Biology Screening

14 January EMBL Heidelberg
Distinguished Visitor Lecture: Bas van Steensel, Netherlands Cancer Institute

17 January EMBL Monterotondo
Distinguished Visitor Lecture: Wolf Reik, The Babraham Institute, Cambridge, UK

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

people@EMBL



Rebecca Greenhaff has joined EMBL-EBI as an event organiser. Rebecca, whose responsibilities include managing the logistics and administration for a variety of events, has worked in various event management positions, including eight years at the Institute for Manufacturing at the University of Cambridge. When not organising conferences, seminars, dinners or workshops she also enjoys painting – a style that has recently evolved to pirates and superheroes to keep pace with her young son.



EMBL's European Learning Laboratory for the Life Sciences (ELLS) has a new education officer, **Eva Haas**. Originally from Heidelberg, Eva joins the lab following positions working in science communication and public engagement in the UK. Eva has a PhD in Microbiology from the University of Manchester, and will support teacher training in areas including learning labs, webinars and lecture series. She might even give EMBL's merchandise a run for its money: one of her hobbies is knitting!

Image competition

To mark EMBL's 40th anniversary, the Office of Information and Public Affairs (OIPA) is creating a 2014 calendar featuring some of the most striking scientific images from across the lab. This is your chance to showcase your vision, creativity and passion for science by sending us a research-related picture produced at EMBL that inspires, informs or intrigues.

The deadline for submissions is Thursday, 7 November 2013. Please send entries by email with the subject 'photo competition'



to: socialmedia@embl.de (get in touch for the terms and conditions). A judging panel will decide on the top 20 and then we will ask our Facebook followers to vote for the best 12 to be featured in the calendar.

This edition's cover features some stunning submissions from postdoc Stefan Günther

awards&honours

Hats on!

In a dazzling autumn ceremony on 19 October, the University of Umeå awarded EMBL Director General Iain Mattaj an honorary doctorate. The degree *honoris causa* recognises Iain's research achievements and his role in establishing and developing the Molecular Infection Medicine Sweden (MIMS), one of four nodes of the Nordic EMBL Partnership for Molecular Medicine, which seeks to combine complementary expertise in biomedicine and foster industry collaborations.

The annual celebration, which this year created eight honorary doctors, included three days of popular science lectures covering topics as diverse as environmental science, history, anthropology and molecular biology. "The Nordic EMBL Partnership presents significant opportunities to combine expertise and strengths to address challenges in areas



University of Umeå Dean Anders Berg (left) confers an honorary doctorate on Iain Mattaj

such as neurobiology, medical genetics, infection medicine and cancer," says Iain. "MIMS continues to enable young researchers to explore important new research avenues that could have important implications for our understanding of health and disease. I am very pleased to receive this award."

➔ For more on the Nordic EMBL Partnership, see page 3.

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