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Editorial

International exchange and cross-border mobility are central to EMBO's mission of supporting the life science community. That is why we created the Science Solidarity list in response to the U.S. government's travel ban (*page 5*). Using EMBO's strength in bringing people together, we felt that connecting scientists needing help with those offering it was something that we could, and should, do.

Other political developments, though less widely publicized, also affect EMBO's work. For example, the situation for postdoctoral fellowships in Europe has changed, with several national governments in Europe no longer accepting nontaxable fellowships and insisting on full social security payments. The result: in some cases fellows have suffered unacceptable net reductions in their fellowship, in others the host institute or research group has had to supplement their stipends.

On *page 9*, we present some of the comments, questions and feedback we have received from EMBO Long-Term Fellows. And we look at the challenges and opportunities that this change in the situation in Europe brings. Is there any future for tax-free fellowships? What consequences would a transition to contracts have? And what else needs to change? These are the types of questions we are exploring to make sure the EMBO Fellowship Programme retains its place as the most respected and effective postdoctoral funding programme in Europe.

Maria Leptin Director, EMBO



EMBO NEWS



EMBO reports

EMBO Molecular Medicine

molecular systems biology



Protected as soon as you unveil your masterpiece

EMBO Press scooping protection policy extended to preprints

In December 2016 the four EMBO Press journals announced the extension of their "scooping protection" to preprints to help and encourage scientists to share their research findings in a timely manner.

Scooping protection is a key characteristic of the Transparent Process that EMBO Press uses for its four publications – *The EMBO Journal, EMBO Reports, EMBO Molecular Medicine* and *Molecular*

How EMBO supports preprints

- → authors encouraged to post preprints before or coincidental with submission to an EMBO publication
- → citation of preprints encouraged
- → scooping protection extended to preprints
- → preprints accepted as part of publication record for EMBO Long-Term Fellowship application

Systems Biology. Under this policy, similar findings published by other researchers during peerreview or revision of a manuscript are not used as a criterion for rejection. Now, scooping protection applies from the day a manuscript is posted on a recognized preprint server, if it is submitted to an EMBO Press journal in a similar form within four months of posting.

"Preprints are one important step towards an Open Science future and allow sharing of research findings with minimal delay," explains Bernd Pulverer, Head of Scientific Publications at EMBO. Preprints afford scientists and journals the time necessary to publish reproducible, reliable research findings. Depressurizing the publication process in this way will encourage thorough peer review, prepublication quality control and data curation processes, as well as proper revision time.

Pulverer continues: "We hope that extending the scooping protection policy of our journals to preprints will encourage preprint posting without the concern of losing priority to a competitor's publication. It is now up to funders and institutions to encourage preprint posting by making them count for research assessment."

EMBO has already taken this step, and accepts preprints as evidence for research achievements as part of the Long-Term Fellowship applications. Young scientists looking to take the next step in their careers do not always have time to wait for publication of their research in a peer reviewed journal, which can take anywhere between six months and two years, before having to apply for postdoctoral fellowships. Preprints allow them to formally document their research before the completion of peer review, making it publicly available for assessment in a funding application.



Watch the video: EMBO Press – A different way to publish https://youtu.be/6iFa3AOOOmA

EMBO Director Maria Leptin says: "We understand the time pressure young researchers face, and therefore made the decision to accept preprints as part of a Long-Term Fellowship applicant's publication record. Although preprints cannot replace peer-reviewed publications, they offer applicants an additional opportunity to demonstrate the way they approach scientific questions and interpret experimental data."

As a signatory of the San Francisco Declaration on Research Assement (DORA), EMBO aims to use alternatives to journal metrics for research assessment and does not accept papers submitted for publication as part of an application for funding. Through its support for preprints, EMBO is further encouraging a move away from journal metrics.

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More information embopress.org emboj.embopress.org/content/35/24/2617

Establishing talent across Europe

EMBO Installation Grants scheme continues to expand

In December 2016, eight life scientists were accepted into the Installation Grants scheme by participating countries. These grants are awarded annually to early-career life scientists establishing new independent research groups in the countries taking part in the scheme. Each of the award holders receives annual funding of 50,000 euros for three to five years while they establish their laboratory in the host country. In addition to financial support, they benefit from networking opportunities, mentorship and access to research leadership training by becoming part of the EMBO Young Investigator Network.



Gene knock-up to treat Parkinson's disease Tallinn, EE



Telomeres, cancer and aging Lisbon, PT



Mulat Alper Ceviler

Mediator-estrogen receptor interaction Ankara, TR



Cell fate plasticity in development and tissue homeostasis Poznan, PL



Temporal and metabolic regulation of stem cells Lisbon, PT



Non-coding cancer driver mutations in isoform networks Istanbul, TR



Construction of the eukaryotic flagellum Prague, CZ



Crossover control in plants Poznan, PL

Lithuania joins Installation Grants scheme

The eight scientists awarded EMBO Installation Grants in 2016 are the eleventh cohort to receive funding through the scheme. Initiated in 2006, EMBO Installation Grants are designed to counter the "brain drain" of scientists to countries with large economies and established scientific facilities.

"EMBO Installation Grants encourage talented young group leaders to establish laboratories in countries which might otherwise lose their top scientists abroad. They also support the transfer of skills and knowledge from more established research communities to the participating countries," says Programme Manager Gerlind Wallon.

In 2017, the Installation Grant scheme included Lithuania for the first time. The country joined the Czech Republic, Estonia, Poland, Portugal and Turkey as hosts for EMBO Installation Grantees. Virginijus Siksnys, Lithuania's representative at the European Molecular Biology Conference (EMBC), comments on the positive effects for Lithuania: "It is a pleasure to see new opportunities for young researchers to establish research facilities in Lithuania. The ability to compete with larger economies to attract the finest researchers will help the continued growth of life sciences in our country."

embo.org/funding-awards/installation-grants



Ottoline Leyse

Researcher, mother, advocate

OTTOLINE LEYSER receives the 2017 FEBS | EMBO Women in Science Award Plant biologist Ottoline Leyser is the recipient of the tenth FEBS | EMBO Women in Science Award for her work on the evolutionary, developmental and biochemical mechanisms that enable plants to respond and adapt to environmental changes.

She describes receiving the award as a great honour, explaining that "it's both a joy and a privilege to work in research science, especially in molecular biology, where technological advances are currently opening up so many opportunities for discovery." Leyser, who is Director of the Sainsbury Laboratory at Cambridge University, UK, continues: "To make the most of these opportunities science needs diversity, and initiatives like this award have an important part to play in opening the doors of the laboratory to everyone."

Leyser's focus on understanding how plants respond to their environment led to her discovery of the mechanism of action of the plant hormone auxin and the identification of a second group of plant hormones known as strigolactones. She has formulated a model of how the two hormone systems interact to regulate plant development. In order to elucidate the underlying mechanisms she has added computational modelling to the more traditional array of techniques. Ottoline Leyser is also an outstanding role model for future generations of researchers, having successfully combined academic research, parenthood and other activities. In addition to acting on various boards and committees, dedicating time to mentoring and public outreach, and providing evidence to the UK Parliament, she is a strong advocate for women in science.

"Ottoline has shown us how to be a firstrate scientist and a first-rate parent at the same time: manage your time well to accomplish both," comments former EMBO Council Chair Detlef Weigel from the Max Planck Institute for Developmental Biology in Tübingen, Germany. "Many of the real challenges – as Ottoline doesn't tire to remind us – are not gender, but parent issues."

The award of 10,000 euros will be presented at the FEBS Congress in Jerusalem in September 2017, where Leyser will present a plenary lecture. Nominations for the 2018 award will be accepted until 1 October.

embo.org/funding-awards/ women-in-science-award

A show of unity and support

More than 1,000 life scientists offered help for their peers impacted by White House order

ithin hours of US President Donald Trump signing an order to ban citizens of seven predominantly Muslim countries from entering the United States, some European researchers had heard about first cases of scientists who were affected by it. Researchers were being restrained from boarding planes, got stuck at airports while trying to return from a conference, or had their visa revoked. Some of the first life scientists who decided to protest against the ban used Twitter to make a call for spontaneous help.

EMBO magnified this initial initiative by setting up the web-based "Science Solidarity List" in order to bundle offers of help from scientists across the globe. Within 48 hours, more than 700 researchers from over 30 countries contributed to the list, offering temporary lab or desktop space, access to computers, libraries, and even accommodation in their private homes. Media reported on the initiative, and news about the list rippled across social media for several days.

EMBO did not track how many offers were accepted by scientists affected by the travel ban. But the global signal that the scientific community sent was clear. "What a show of unity and



support," someone stated on Twitter, when the list had reached more than 1,000 life scientists offering help.

embo.org/science-solidarity Twitter: #scienceshelters, #sciencesolidarity

India | EMBO Symposia launch

EMBO partners with Wellcome Trust and DBT India

BMBO announced a new partnership with the Wellcome Trust/DBT India Alliance. Together, they will fund up to three life science meetings per year in India. The meetings will address discovery and innovation across disciplines, focusing on global challenges in the context of the life sciences.

"India has a thriving scientific community. This new partnership is to strengthen the interactions", said Maria Leptin, EMBO Director.

Each scientific meeting will include leading scientists, allowing early- to mid-career life scientists to interact with leading international experts.

Shahid Jameel, Chief Executive Officer, Wellcome Trust/DBT India Alliance added: "We hope this partnership will catalyze a high level of discussion and identify new areas of interdisciplinary life science research for India."

The next application deadline for India | EMBO Symposia in 2018 is 15 July 2017. embo.org/funding-awards/

courses-workshops/india-embo-symposia



Exploring individual leadership styles

EMBO Laboratory Management Courses hone research leadership skills

went home feeling more prepared to face the academic future." This is how Leonardo Valdivia, who will set up his own lab in Chile this year, described the value of the EMBO Laboratory Management Course on Research Leadership (*see box*). Scientists not only dedicate time to advancing scientific knowledge. They also face the pressures of tight budgets, having to obtain grants, publishing papers and managing staff. In addition to their talent, scientific skills and hard work, training in leadership can help them to further increase the research performance of their laboratories.

EMBO provides its Research Leadership course to help young group leaders and postdocs develop their leadership and management skills. What began over 10 years ago as a programme for EMBO Young Investigators has grown to a series of some 35 courses for scientists run each year in Heidelberg, Germany, with additional courses held throughout the world at universities and research institutes that request them (*see box*). To deliver broader training, EMBO is also exploring the provision of other courses relating to the Participants learn about leadership through group discussions, working in pairs and individual reflection.

responsible conduct and publication of research. The aim for the EMBO Laboratory Management courses on Research Leadership and other topics is to contribute to contribute to the skills, productivity, well-being and fulfillment of those who dedicate their lives to science.

Leadership that fosters development

"Leadership is the art of guiding people to achieve a common vision, while taking care of their needs and fostering their development," explains course leader CJ Fitzsimons. It is the 'while'

What are EMBO Laboratory Management Courses?

The EMBO Laboratory Management Course, now in its second decade, is administrated by EMBO's not-for-profit daughter company, GFLW (Gesellschaft zur Förderung der Lebenswissenschaften Heidelberg GmbH). Three- and four-day courses for group leaders and postdocs take place throughout the year near Heidelberg, Germany. The course can also be delivered locally at institutes and universities worldwide.

In addition to the original course – which has been renamed "Research Leadership" to better describe the content, value and aim of the course – GFLW offers EMBO courses on "Negotiation" and "Self-Leadership". Together, they aim to address the continued awareness of the importance of good leadership and other 'soft' skills in science – both for the training and well-being of scientists, and for the quality and excellence of their research and its communication.

EMBO and GFLW are open to suggestions from the community for additional training or support needed to promote the responsible and efficient conduct of excellent research.

For information on how to attend a course or organize one at a local institute, visit lab-management.embo.org



"Leadership is the art of guiding people to achieve a common vision, while taking care of their needs and fostering their development." cj Fitzsimons

in this statement that is key to the Research Leadership course philosophy.

Developing staff along the road to achieving a vision means that increasingly ambitious goals can be set as lab members gain skills and develop qualities. At the same time, supporting scientists to become well-rounded individuals who can contribute as leaders within or outside of research is critical to the future of science itself.

The Research Leadership course is focused on people, teams, and the skills needed to lead and manage them. The course does not provide a set 'recipe' for making identical leaders. Rather, participants explore their own leadership role(s) and personality to determine for themselves what kind of leader they want to be. The course then equips participants with ideas, models and tools with which to observe, analyse and influence their own and other people's behaviour.

"The course was delivered in a perfect mix of theory and practice, and using personal experiences for role-plays made it very realistic. I feel much more confident now in facing the career challenges that lie ahead of me." Kerstin Kinkelin

Previous participant Liming Sun, who started her lab at the Institute of Biochemistry and Cell Biology in Shanghai, China, two years ago, described her experience: "The course picked up very practical topics, then led us to dig into our own personalities to discover the internal building blocks of leadership. Pair and group discussions empowered me to have a clearer idea of how to develop more productive interpersonal communications."

The course is delivered in a workshop style by experienced trainers from two partner consultancy firms. Each workshop is tailored directly to the experience and professional needs of the postdocs or group leaders who attend it, with examples, experiences, ideas and questions from the participants captured and integrated into the course. An example of one module, on 'delegation', is shown on the right. Kerstin Kinkelin, who is establishing a training and career development programme for postdocs at the Francis Crick Institute in London, says: "The course was delivered in a perfect mix of theory and practice, and using personal experiences for role-plays made it very realistic. I feel much more confident now in facing the career challenges that lie ahead of me."

Delegation

Many leaders and managers can find delegating tasks difficult. Relying on your staff to do a good job takes trust, skill, care and patience. Nevertheless, delegation is important for both efficiency and team development, ensuring increased flexibility and performance. How you delegate a specific task will depend on both the nature of the task and the skills, experience and qualities of the person to whom you delegate. There are four approaches to delegation – according to Hershey & Blanchard's situational leadership, adapted from Landsberg (1997) – that depend on a staff member's skill for the task and willingness to do it (see Skill-Will matrix below):

Classic delegation

Use for: Staff members who are highly

Approach: Discuss the goal, set a deadline

and leave 'Paul' to it. His skill is sufficient

Tip: Do not micromanage staff; let them

skilled in and willing to take on a task

and he is willing and able to do it.

Guide

Use for: Staff who are enthusiastic about a task, but lack the skills or experience needed.

Approach: Assign the task, but help 'George' take small steps. Check his results and give him feedback to help him develop. As he gains competence, you can start to release control.

Tip: Be sure that the task is neither too challenging nor too easy; you are aiming to grow your staff member's skills, not overwhelm them.





Tsung-Pin Pai

Chi-Huey Wong

Far Eastern connections

Cooperation agreement fosters exchange with Taiwanese scientists

y friends and colleagues in Europe told me it's a competitive but excellent programme, so I decided to apply," says Yuki Nakamura, who was selected to carry out research on lipid diversity in plant growth and development at the Academia Sinica in Taipei and included in the EMBO Young Investigator Programme in 2015. "Being part of the EMBO Young Investigator Programme has definitely helped my career."

Nakamura was eligible to apply to the programme because of a cooperation agreement that EMBO and the Taiwanese Ministry of Science and Technology and Academia Sinica signed more than four years ago. In addition to young group leaders like Nakamura, the agreement allows postdocs and established scientists to benefit from EMBO funding and training opportunities. The cooperation was established as part of EMBO Global Activities in order to support global exchange and researcher mobility between Europe and the rest of the world

Becoming part of a network

EMBO Member Bertrand Jordan, from Marseille, France, was an early advocate for strengthening the ties between European and Taiwanese researchers. Talking about his experience of interacting with scientists in Taiwan at the time, he says: "Taiwan has a dynamic and well-funded life sciences establishment, in a number of universities but also in the Academia Sinica. There was a definite wish to extend contacts and collaborations beyond the USA, where many scientists trained.'

Scientists based in Taiwan can apply for EMBO Long- and Short-Term Fellowships or, like Nakamura, to the Young Investigator programme. After studying and working in Japan, Singapore, Germany and Taiwan, Nakamura became aware of the programme through Academica Sinica. He

found forming connections with other researchers especially valuable. "Because Taiwan is geographically distant from Europe, interacting with colleagues is costly. Thanks to travel support, I can visit Europe more often for scientific discussions and collaborations.

"Giving invited lectures at major European universities and conferences has greatly increased my networks. I have established new collaborations with scientists in Europe and connected with a few EMBO Members with a common research interest."

A different way of thinking

Tsung-Pin Pai received an EMBO Long-Term Fellowship to carry out postdoctoral research in Josef Penninger's lab at the Institute of Molecular Biotechnology in Vienna. Like Nakamura, he values the networking opportunities this has offered him. Through his work in Penninger's lab, Pai has "established collaborations with PIs from Australia, France, USA and Taiwan. [Thanks to the fellowship] I connected more with scientists from the rest of the world.'

Talking about how he benefited from the EMBO Fellowship, Pai also describes another aspect of personal and professional development. Moving to Vienna was a culture shock that helped him to approach his research in a completely different way. "It was like I reset myself," he explains. "It felt like I had never touched a pipet before and had to learn from the very beginning. Living abroad changed my perspective and helped a lot -I learnt a new way of thinking and managing my experiments and my time.

"The approach to work is different here - in addition to working hard, working smart is important. Josef [Penninger] allows me to build up my own theory to establish the concept of my project. And people in the lab come from more than ten countries and are experts in different aspects. This is different from the Taiwanese lab I was in, which had a very solid central topic. The diversity and collaboration opened my mind and changed my view of science."

Exchange at scientific meetings

As part of the cooperation agreements, EMBO also funds scientific events in Taiwan, such as the EMBO Conference on "Neural Development" or the Global Exchange Lecture Course on "Structural and biophysical methods for biological macromolecules in solution", both of which took place in Taipei in 2015. In addition, EMBO encourages scientific exchange by providing funding for the attendance of scientists from Taiwanese institutions at EMBO events and for EMBO Members and Young Investigators speaking at scientific meetings in Taiwan.

Associate EMBO Member Chi-Huey Wong, Academia Sinica, Taiwan, found that "after signing the cooperation agreement, more scientists from Europe visited Taiwan to give lectures and participate in scientific meetings, and more Taiwanese researchers and faculty members visited Europe to advance their study and work."

Bertrand Jordan confirms that the cooperation agreement has led to an increase in the number of contacts between Taiwanese and European researchers. Drawing on his own experience, he continues to encourage forming these connections: "The Taiwanese life sciences sector is dynamic and offers excellent facilities. Making use of EMBO's support, any scientist should consider it as a target for collaborations."

embo.org/about-embo/global-activities



By Kathy Weston

In 1981, Gerrit van Meer, a newly fledged Dutch PhD student, arrived at the European Molecular Biology Laboratory (EMBL) in Heidelberg to start a postdoc with Kai Simons. His funding came from a familiar source: an EMBO Long-Term Fellowship. As he says, "there were not many alternatives in those days. The fellowship gave me the status of independence, just as it does to today's fellows." Gerrit's postdoctoral period turned out to be successful: "I got a paper out after one year, and stayed on for, in the end, another four years," he recalls. "In those five years, I produced a series of papers that established me as an independent scientist and supported me for the rest of my scientific career."

Today, as President of the European Molecular Biology Conference (EMBC), the body that funds all of EMBO's Programmes and activities, Gerrit still has the EMBO Long-Term Fellowship at the front of his mind. Set up in the 1960s as a way of sending young European postdocs to the best labs across national borders, the fellowships have contributed to the training of thousands of scientists, many of whom have gone on to become some of the world's most influential researchers. Offering a two-year tax-free stipend, EMBO Fellowships were an invaluable stepping stone to an independent scientific career, at a time when the average postdoctoral period lasted somewhere between two and five years.

"Postdocs are worried"

But times have changed from those early days. The boom in biomedical science and molecular biology has resulted in many more postdocs being trained than can rapidly achieve academic independence, leading to a situation where postdoc jobs are less of a short training period, and more a way of life, sometimes lasting up to a decade. David del Álamo Rodríguez, EMBO Fellowship Programme Manager, sums up the problem: "Postdocs are now worried – they may have a couple of kids and they're married, and it's not fair they have to live on a stipend," he says. "They need stability."

EMBO Fellowships have evolved to meet this challenge. Bolted on to the modern stipend are benefits such as allowances for children, child care and travel, as well as parental leave, the option for working part time, and a private pension scheme. Fellows become part of a community, and the scientific contacts they make can lay a solid foundation for the rest of their careers. EMBO Fellowships are still coveted and highly competitive, with only 11 to 16% of applicants in the past five years passing the rigorous selection procedure, which includes an interview with an EMBO Member.

However, all is not perfect. It is becoming increasingly harder to ensure a level playing field for all EMBO Fellows, due to changes in employment and tax law in many countries. Maria Leptin, EMBO Director, outlines the problem: "An increasing number of national governments no longer accept non-taxable fellowships and insist on full social security payments," she says. "This has led to situations where the fellows either suffer unacceptable net reductions in their fellowship, or else the host institute or research group has to supplement the fellowship - in some cases with a supplement that almost matches the fellowship itself. Not all research groups and institutes can afford this, and some therefore cannot host EMBO Fellows."

Such considerations have led to a re-evaluation of the programme, to ensure that EMBO's support of early-career researchers continues to be an important part of the European research landscape. Today, many other programmes fund postdoctoral fellowships – a conservative estimate indicates there are some 120 other schemes for molecular life sciences alone – many of which pay for national taxation and social security entitlements. So what can EMBO do?

Continuing to support transnational science

One possibility to continue to provide funding for postdoctoral researchers across Europe is a switch from paying stipends to negotiating contracts for EMBO Fellows with host institutions. This would not only ensure that fellows in every country have a comparable net income, and receive the benefits they're entitled to, but it also opens the door to securing extra funding for the EMBO Fellowship Programme: the European Commission Marie Skłodowska-Curie COFUND scheme will not co-fund stipendbased programmes. Gerrit van Meer thinks that adopting contracts would give EMBO Fellowships the boost they need: "A raise in social benefits would increase the status of the fellowships and increase the visibility of EMBO as it wants to be perceived: top of the bill!"

There are other possible changes to consider, such as the duration of the fellowship, as Gerrit acknowledges: "Two years is a short time, because it means you must start looking for a new position after one year. This hardly gives you time to make enough progress to prove that your postdoc is running successfully." The pilot EMBO Advanced Fellowships, where existing fellows in European labs have the chance to apply for a further two years' money, have, so far, been a success, suggesting a potential way forward.

EMBO remains committed to helping the best early career researchers do transnational science, something of particular importance in the current political climate. Gerrit van Meer is clear on this: "Science is an international activity," he says. "Let's try to keep it that way." And Paul Nurse, EMBO Secretary General, could not agree more: "Long-Term Fellowships have been at the heart of EMBO's mission to foster transnational science since EMBO began in the 1960s. The scheme has evolved over the years and we need to continue to be adaptable and receptive to new ideas that will keep it relevant and attractive to the best young researchers. The EMBO community as a whole will help in maintaining this highly successful and effective fellowship scheme."

A challenge for EMBO Fellows

- "I was able to prove that my fellowship does not constitute a contract of employment between myself and EMBO. They nevertheless decided to consider the income taxable"
- "Unfortunately and although I sent the local tax office a copy of my EMBO contract, I just got a letter asking me to pay ~30% of my fellowship as tax."
- "The bank did not seem to understand that EMBO Fellowships should be tax-exempt and therefore they have to report my income to the taxation bureau directly."
- "I hope you can help me, because I am feeling a little worried about the money. We are surviving [because] I also spend a lot of my savings."

tp://emboj.embopress.org/content/34/14/1848

Where membranes kiss

Membrane contact sites were the topic of discussion at two recent EMBO Workshops. Some of the organisers and speakers explain why these sites are increasingly becoming the centre of attention.

By Katrin Weigmann

Rextbooks usually depict organelles as independent units floating through the cytoplasm. But research is showing that these pictures couldn't be further from the truth: Instead of existing and operating as independent units, organelles are tethered to each other through numerous contact sites, and these also function as platforms for molecular exchange.

Membrane contact sites are, in fact, not a recent discovery. They were first described more than 60 years ago, albeit in a very specialized context. They were shown to exist between the plasma membrane and the sarcoplasmic reticulum in muscle cells, where they function in calcium release during muscle contraction. Only recently have scientists explored their abundance and diversity more generally: Membrane contacts seem to exist between virtually any two organelles, and they do much more than just calcium signalling. "People are now suddenly realizing that membrane contacts could have a much broader application," says William Prinz of the National Institute of Diabetes and Digestive and Kidney Diseases in Bethesda, Maryland.

Adding precision to lipid exchange

One function of contact sites that has been investigated in some detail is lipid trafficking. The chemical composition of each organelle's lipid bilayers critically defines its function, and some organelles depend on lipids produced in others. Crosstalk between organelles can be accomplished via vesicles. But mitochondria, for example, are not connected to the vesicular transport system and depend on contact sites with other organelles to receive lipids.

Other membranes also use contact sites for local lipid exchange, as it is faster and more precise than vesicle transport. For example, lipid trafficking between the ER and the plasma membrane plays an important role in signal transduction. Work from Pietro De Camilli at the Yale University School of Medicine in New Haven, Connecticut, showed that lipid transport from the ER is required to replenish phosphatidylinositol 4,5-bisphosphate in the plasma membrane when it is hydrolysed during signal transduction. Moreover, its metabolites, second messengers diacylglycerol and phosphatidic acid, are removed from the plasma membrane via ER contact sites to end the signal.

"The work from De Camilli showing that proteins that move lipids are actually involved in signalling made people realize how ubiquitous this process may be," says Prinz. Such work helped to shift the field from niche existence to central stage. "People feel there is the potential for something really new. There are not so many questions in cell biology that are this wide open," says Prinz.

He and his colleagues discovered that lipid transfer at contact sites also plays a crucial role in stress resistance. They found a mechanism that allows the cell to shuffle ceramides from the ER to the Golgi complex to prevent toxic ceramide accumulation in the ER. "When the ER is stressed, many more contacts form between ER and the Golgi and we think this is the condition in which



A single confocal plane of mitochondria (blue), endoplasmic reticulum (red) and replicating mtDNA (green) in a living human cell.

non-vesicular transport actually becomes important," explains Prinz.

Researchers are now discovering an increasing number of contact sites and proteins that are required for their maintenance and act as tethers. Prinz continues: "For most contacts there are a tremendous number of tethers. I think many of them will have to do with stress and handling signalling."

Helping mitochondria to divide

According to Jodi Nunnari, University of California, Davis, contact sites play a central role in organizing the cell's dynamics and morphology. "The cell has a certain organization and we study all its aspects separately," she says. But in the end, these different parts need to coordinate their actions, and Nunnari thinks that contact mitochondrial division occurs only at contact sites near replicating nucleotides.

Microscopy has been crucial in these discoveries and, according to Nunnari, it has played a central role in the advancement of the field altogether. "Live cell high-resolution imaging has moved the field from something that is purely biochemical to something we can see. And people love that – me included," she comments.

Affecting neuronal function

Many neurodegenerative diseases are linked to mitochondrial dysfunction, and according to recent research from Estela Area-Gomez and Eric Schon at Columbia University, New York, contact sites between mitochondria and the ER are involved in the pathology of Alzheimer's disease. The researchers joined the field when they were things that are affected in Alzheimer's disease and that the current models cannot account for," says Schon.

According to Area-Gomez, neurons might be particularly sensitive to defects in ER – mitochondrial contacts. "Calcium homeostasis and lipid regulation are the main pillars of neuronal function. This is why we believe that dysfunction of ER – mitochondrial contact sites affects the brain the most." Indeed, there are indications that alterations in ER – mitochondrial contacts are involved in a wide range of neurodegenerative diseases, including Parkinson's disease, Amyotrophic lateral sclerosis, Huntington's disease and Friedreich's ataxia.

"The next few years will see an explosion of people discovering new contacts and proteins enriched in these contacts," predicts Prinz. "The

A focus on membranes at EMBO Courses & Workshops

Intracellular membrane contact sites were among the topics discussed at two recent EMBO Workshops. Back in September 2016, the workshop "Organelle contact sites – Intracellular communication and role in disease" was organised by Jodi Nunnari, EMBO Member Luca Scorrano, VIMM, Padova, Italy, and *The EMBO Journal* Editor Andrea Leibfried. The meeting focused specifically on different aspects of membrane contact site architecture and their function in immune responses, apoptosis, organelle dynamics and calcium- and lipid homeostasis.

In January 2017, researchers came together in Goldegg am See in Austria at the EMBO Workshop "Emerging concepts in cell organization", which was co-organized by EMBO Members Marino Zerial, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany and Catherine Rabouille, Hubrecht Institute, Utrecht, Netherlands, as well as Gabriele Seethaler, Radstadt, Austria. Intracellular contact sites were part of the discussions.

Future events with a focus on membrane biology

- → EMBO Workshop: Signalling and endomembranes, 8-12 May 2017, Santa Margherita di Pula, Italy
- → EMBO | EMBL Symposium: Molecular and Cell Biology of Membranes, 21–23 May 2017, Heidelberg, Germany
- → EMBO Conference: Cell polarity and membrane dynamics, 4-9 June, San Feliu de Guixols, Spain
- → EMBO | FEBS Lecture Course: Molecular architecture, dynamics and function of biomembranes, Cargèse, France

embo.org/events



Endoplasmic reticulum (green) and mitochondria (red) in a human U2OS cell.

sites may do just that – in particular those involving the ER. "The ER is so outspread, it could be a system regulator much like the cytoskeleton," she suggests.

Research from Nunnari's laboratory recently showed how the ER coordinates mitochondrial division. It had long been a mystery how mitochondrial DNA replication is spatially controlled and how the cell makes sure it is equally distributed when mitochondria divide. Nunnari and her colleagues found the solution in an intricate crosstalk between the ER – mitochondrial contact site and the mitochondrial nucleoids.

"We think that contact sites nucleate the assembly of a replication platform," says Nunnari. Moreover, the researchers found that looking at presenilins – proteases involved in the generation of amyloid plaques observed in the brains of Alzheimer patients – and found them to be localized at ER – mitochondrial contacts.

Mutations in presenilin genes cause a familial form of Alzheimer's disease, whereas individuals harbouring a specific allele of apolipoprotein E (ApoE4) are at higher risk of developing a sporadic form. Area-Gomez and Schon found that both mutations lead to a failure to maintain proper ER – mitochondrial contact sites.

"This told us that the functional underpinning of Alzheimer's disease is presumably a problem in ER – mitochondrial connectivity. These contact sites are involves in calcium signalling, lipid homeostasis and mitochondrial function – all next big problem is going to be figuring out their function, how they all work together and cooperate." It is already becoming clear that membrane contact sites form the basis for some very fundamental processes, so it might be expected that many discoveries in the field will have medical relevance.

Beyond scientific discussions

EMBO Science Policy Lecture Scheme brings policy topics to scientific events

(T applied for a Science Policy Lecture Grant because I think it is important to give students attending a [scientific] course a wider idea of science, and that includes science policy," says Pascale Cossart. The microbiologist, who heads the Bacteria-Cell Interactions Unit at the Institut Pasteur in Paris, France, captures the essence of the EMBO Science Policy Lecture Scheme.

All too often, policy discussions take place in non-scientific settings. By providing funding for meeting organisers to include a science policy lecture, EMBO encourages scientists to explore the position of research in society. The aim is to expose all researchers attending a conference to science policy topics and to discuss policy in a scientific setting more routinely.

The topics for EMBO Science Policy Lectures can range from the ethical, legal, social, safety and economic issues arising from scientific research and the use of biotechnologies, to discussions about developments in scientific publishing, responsible conduct of research, issues in research funding, scientific advice to policymakers and concerns at the interface between science and politics.

Pascale Cossart has included EMBO-funded science policy lectures at several events in the past. As one of the organisers of the EMBO | FEBS Course "The New Microbiology" in August 2016, she invited Rino Rappuoli, Chief Scientist at GSK Vaccines & Diagnostics in Siena, Italy, to present a critical insight into vaccine development in the last 35 years. Using the meningitis B vaccine as example, he described how new technologies, together with effective European policies, can reduce disease occurrence and transmission.

"The topic of vaccination was particularly relevant, because vaccinations are sometimes seen negatively by people although they are so beneficial," explains Cossart. "Rino Rappuoli gave an outstanding presentation which covered any possible issue dealing with vaccinations. He evoked a lot of discussions among both students and lecturers."

Applications for lecture grants from organizers of a scientific event are accepted throughout the year. The funding is intended to cover the speaker's travel and accommodation expenses. The lecturer may be a scientist, policy expert, sociologist, journalist or any other expert on the topic, and the lecture must be an integral part of the main scientific programme.

embo.org/funding-awards/lecture-grants/ science-policy

Announcing the 5th World Conference on Research Integrity

EMBO will lead panel on responsible research conduct in day-to-day work

s part of EMBO's work on responsible research conduct, the organisation supports the biennial World Conference on Reseach Integrity (WCRI), a global forum for discussing the topic of integrity in scientific research.

This year's 5th WCRI will take place in Amsterdam from 28-31 May 2017 and will focus on transparency and accountability in science. EMBO Science Policy Programme Manager Michele Garfinkel is the organizer of a session on assuring responsible conduct in researchers' day-to-day work. One of the speakers will be Bernd Pulverer. Head of the EMBO Scientific Publications. He will illustrate the steps EMBO Press is taking to encourage transparency in reporting research. In addition, EMBO Member Claudio Sunkel will address the roles of researchers and administrators in assuring research integrity.

The biennial global conference brings together those researching integrity, administrators, funders, editors, policymakers, representatives of academies of sciences and other scholars. "We would like to encourage more members of the scientific research community to take part in the conference," says Michele Garfinkel, EMBO Science Policy Programme Manager. "Individual scientists have responsibilities and obligations for research integrity, so it is important to make sure that their views and experiences are included in the discussions.'

For anyone interested in contributing to the discussions on research integrity or finding out more about the challenges the scientific community faces, registration remains open until 20 May 2017.



Bridging the gap

EMBO Molecular Medicine's new Chief Editor on the need to continue connecting basic and translational science

Philippe Sansonetti, Director of the Molecular Microbial Pathogenesis Laboratory at the Institut Pasteur in Paris, France, has been part of EMBO Molecular Medicine from the very beginning. After having initial discussions with past EMBO Director Frank Gannon on how EMBO could engage more strongly with clinical researchers and medical professionals and molecular medicine, he joined the journal's editorial team as Senior Editor when it launched in 2011.

At the beginning of the year, he took over as Chief Editor from cardiovascular biologist Stephanie Dimmeler from the University of Frankfurt. He talked with EMBO's Head of Scientific Publications Bernd Pulverer about why taking on this role felt like the natural next step and his vision for the journal.

What attracted you to the role as Chief Editor?

I feel like I have always been part of the process, from being at the meeting that kicked off the idea to becoming Senior Editor. I'm part of the family.

The research that is published in EMBO Molecular Medicine is of the highest standard as all papers go through a very serious and dedicated review process. I was excited by the idea to build on that success.

What strikes me as very positive is the perception that the community has of the quality and the fairness of the review process at EMBO Press. There is a sense that [papers are] very professionally handled, but that [the journal] still belongs to the scientific community in a way. This is not just the case for EMBO Molecular Medicine but also for the other EMBO publications.

What contributes to the success of broad scope journals like EMBO Molecular Medicine?

I think being selective, whether we like it or not, is the secret for the success of a journal. But the

point is that we really need to not only select the best possible articles and contributions in terms of their technical quality, but we also need to figure out the golden nuggets – the studies that really move the field forward.

EMBO

Molecular

Medicine

This is true in my own disciplines and others, and I hope that we, the editorial team, can achieve that collectively. We need to keep our selective attitude but, at the same time, to try to open up to new areas.

Talking about new scientific areas, are there subjects you intend to focus on specifically?

The journal is already covering a large area of research in different disciplines of molecular medicine, and we want to continue this broad scope. Of course, there are some gaps, or maybe lack of visibility of the journal, in certain communities. For example, in my experience my own scientific community doesn't see the journal enough.

Of course, as Chief Editor I don't want to look at just my own discipline, but I feel that EMBO Molecular Medicine needs to gain visibility in the fields of infectious diseases, immunology and microbiology, and that is something I would like to work on. Because these subjects are also very much part of the adventure of molecular medicine.

Are there areas in molecular medicine that particularly excite you? What do you consider the top three areas with the potential to explode in the future?

One is diagnostics. We need to improve diagnostic tools for infectious diseases; we need to have this novel point of care testing. This is the only way to get good diagnostics on the spot, start treatment and start isolation, if necessary, in the case of an emerging disease. There is a lot that can be done that needs molecular tools.

Secondly, we need new drugs – this is true for all disciplines, but particularly urgent in

the case of infectious disease, as we need new antibiotics. They are not just going to appear by chance. We need an exhaustive exploration of the microbiological world, because this is where sources of new antibiotics are probably located and from there optimize leads through molecular techniques.

Thirdly, vaccines and immunotherapies are an essential issue; in particular neoadjuvants are a burning issue for vaccine efficiency. There is a permanent state of transition towards a zero risk vaccine, new drugs and new tests.

Do you see a challenge in bridging basic and translational or clinical science?

In many ways, things have been bridged between these disciplines, but it's a permanently moving target. Things change, so new discoveries at the basic scientific level offer opportunities to be translated.

I think we need to make sure that publications like EMBO Molecular Medicine permanently reevaluate the situation and constantly focus on bridging the two communities. This exercise is difficult: it's not like having a purely clinical journal or a purely basic science journal. But that's its charm and power of attraction.

About EMBO Molecular Medicine and EMBO Press

EMBO Molecular Medicine is a peer-reviewed, online Open Access journal dedicated to research at the interface of clinical research and basic biology. It offers those working in this area the opportunity to publish their best work in a broadly distributed and highly visible forum, thereby helping to forge new links between clinicians and molecular biologists.

EMBO Press stands for publishing high quality and reliable research across the biosciences in its four journals, *The EMBO Journal, EMBO Reports, Molecular Systems Biology* and *EMBO Molecular Medicine.*

EMBO Press pioneered the transparent editorial process in order to provide a rapid, fair and efficient publication process. Through developing and employing source data tools, EMBO Press works towards improving data transparency, reuse and discoverability. Through dedicated data integrity checks, it ensures the publication of reliable data. All submitted manuscripts are subject to scooping protection, which extends to manuscripts published on preprint servers. As a co-signatory of the San Francisco Declaration for Research Assessment, EMBO Press is an advocate for moving away from impact factors as a mechanism for research assessment.

embomolmed.embopress.org

Putting human cells on the map

he idea had been bubbling," says EMBO Member Sarah Teichmann from the Wellcome Trust Sanger Institute, Cambridge, UK, about the Human Cell Atlas, a new initiative she has just launched together with other scientists. "I had talked with someone about this four years ago. At the time, it seemed a bit crazy. Even now, it seems crazy - but also more feasible."

The aim of the Human Cell Atlas initiative is to create comprehensive reference maps of all human cells as a basis for understanding health and diagnosing, monitoring, and treating disease. In a first step towards achieving this goal international scientists and clinicians from many different disciplines met at a kick-off meeting in London on 13 and 14 October 2016. At the meeting, they established the framework required

to turn the initial idea into a concrete scientific approach.

"The cell is the key to understanding the biology of health and disease, but we are currently limited in our understanding of how cells differ across each organ, or even how many cell types there are in the body," explains Teichmann. "The Human Cell Atlas initiative is the beginning of a new era of cellular understanding, as we will discover new cell types, find how cells change across time, during development and disease, and gain a better understanding of biology."

www.humancellatlas.org







opening ceremony.

IMP Vienna moves to new building

ack in 1988, when the newly founded Research Institute of Molecular Pathology (IMP) moved to its premises on the outskirts of Vienna, the scientists might have felt a bit isolated. They had been recruited by founding director Max Birnstiel, who, at the time, was EMBO Council Chair and Editor-in-Chief of The EMBO Journal. Birnstiel had a vision: to plant a seed of excellence in a remote area and turn it into a hub for the molecular sciences.

For almost 30 years, the IMP building served this purpose and became the nucleus of the Vienna Biocenter, a thriving life science campus. However, with the old building structure opposing modern infrastructure, the IMP's main sponsor, Boehringer Ingelheim, decided to re-build the institute. The new building was officially opened on 1 March 2017.

The IMP's Scientific Director and EMBO Member Jan-Michael Peters says: "Three aspects were particularly important: communication, flexibility and sustainability. We wanted our new

building to encourage personal encounters, adapt to changing needs, and use resources efficiently."

On 1 March, friends and dignitaries joined IMP researchers and staff to celebrate the official opening of the new building. EMBO Member Emmanuelle Charpentier, Max Planck Institute of Infection Biology, Berlin, Germany, marked the inauguration by using a large pair of scissors to "cut" a symbolic DNA double helix in reference to the CRISPR-Cas9 system she investigated at the Vienna Biocenter.

"The IMP provided a lot of inspiration for me during my time at the Vienna Biocenter", says Charpentier. "Although the people are the most valuable asset of an institution, the architecture also plays an important role."

Between 4 and 6 October, the IMP will additionally mark the occasion with an opening conference.

www.imp.ac.at/news/imp-opening-conference

Würzburg graduate students tackle ubiquitin

he University of Würzburg has launched a new graduate school with a focus on studying the mechanisms controlling ubiquitylation and the contribution of ubiquitin machinery to different diseases. The graduate school, which is represented by spokesperson Alexander Buchberger, Biocenter, Würzburg, brings together 11 principal investigators from different scientific areas, including biochemistry, molecular and structural biology.

Former EMBO Young Investigator Almut Schulze from the University of Würzburg is a member of the Executive Board overseeing the graduate school. She says: "This is an exciting initiative that provides us with the opportunity to investigate a biological problem from multiple different angles."

The graduate school enables PhD students to apply a wide spectrum of stateof-the-art and emerging methods in ubiquitin research to questions spanning cancer, neurodegenerative disorders and infectious diseases, explains Schulze. "But the focus is not just on research," she says. "We also offer our students outstanding training opportunities, including joint lab seminars, student conferences and technology training programmes."

Expanding Oxford's computational biology network



From left to right: Doug Higgs with Sir David Weatherall, WIMM, Sir John Savill and Alastair Buchan, University of Oxford, at the opening of the Centre for Computational Biology.

n December last year, Sir John Savill, Chief Executive of the Medical Research Council, opened the new Centre for Computational Biology, a purpose-built facility at the MRC Weatherall Institute of Molecular Medicine (MRC WIMM).

At the opening ceremony, EMBO Member and Director of the MRC WIMM Doug Higgs highlighted the strong links between the Centre of Computational Biology and other computational groups throughout Oxford, which will help to build a network of skills, expertise and academic excellence in the field.

He said: "The new centre will provide an opportunity for collaboration between a wide range of research groups. Importantly, we aim to provide high quality specialist training in computational biology for students,

post-docs and clinical training fellows."

The centre houses the Computational Biology Research Group, the Computational Genomics Analysis and Training group and independent research groups working on genome biology and quantitative biology of cell fate and tissue dynamics.

www.imm.ox.ac.uk/mrc-computation-centre

Connecting bench and bedside

MBO Members Hans Clevers and Frank Holstege are involved in setting up a new research and clinical treatment facility in the Netherlands. The Princess Máxima Center for Pediatric Oncology in Utrecht will bring together research and care for all Dutch children diagnosed with cancer to achieve its mission of developing treatments and alleviating therapeutic side effects.

Scientific excellence is an important prerequisite, explains Scientific Director Hans Clevers. "We are interested in the entire spectrum from fundamental to clinical research, and there is funding for new research groups." Frank Holstege adds: "It's a very exciting environment with opportunities to achieve a great long-term goal."

www.prinsesmaximacentrum.com

Living Systems Institute opens with international symposium

he University of Exeter announces the opening of its new Living Systems Institute (LSI), an interdisciplinary research facility with the aim of generating new insights into human and plant diseases contributing to today's societal challenges.

EMBO Member Nick Talbot from the University of Exeter explains the concept behind the institute: "The Living Systems Institute will take a holistic view of how cells, tissues and whole organisms operate and, importantly, what happens to them when they succumb to diseases. It is a truly interdisciplinary endeavour which will involve clinical researchers, engineers, physicists, mathematicians, cell biologists, molecular geneticists and a whole string of other disciplines."

The University of Exeter will celebrate the opening of the new building with an international scientific symposium on 5 and 6 July 2017. The event will be hosted by EMBO Member and LSI Director Philip Ingham. EMBO Secretary General Paul Nurse, EMBO Director Maria Leptin and EMBO Member Christiane Nüsslein-Volhard are among the speakers.

www.exeter.ac.uk/livingsystems/opening/ symposium



Focus on brain disorders at King's College London

King's College London has secured funding for the new MRC Centre for Neurodevelopmental Disorders, which will be led by EMBO Member Oscar Marín. The aim of the centre, which is funded by the UK's Medical Research Council, is to turn detailed understanding of the mechanism underlying brain disorders into clinical advances.

"Advances in genetics are starting to give us a reasonable idea about what puts people at risk of developing brain disorders such as epilepsy, autism or schizophrenia," explains Marín. "We ignore, however, how these genetic changes modify the developing brain to cause disease. In the new centre we will work collectively to solve this problem." The centre will bring together scientists from multiple disciplines. They will work at the interface of fundamental and clinical research, explains Marín, with a focus on three large groups of disorders that are thought to be caused by abnormal brain development: epilepsy, autism spectrum disorder and schizophrenia.

The funding of three million British pounds will be used to provide training opportunities for young researchers through a new PhD programme in neurodevelopmental disorders and six-month placements for clinical specialist trainees.

www.devneuro.org/cndd

Awards of Excellence

EMBO MEMBERS

UK New Year's Honours

Several EMBO Members were recognized in the UK New Year's Honours list.

Sir Alec Jeffreys, University of Leicester, UK, became a Member of the Order of the Companions of Honour for his services to medical research and society.

Shankar Balasubramanian, University of Cambridge, UK, and James Smith, Francis Crick Institute, UK, were knighted for services to science and medicine and services to medical research and science education, respectively.

Amanda Fisher, Imperial College London, UK, and Ottoline Leyser, University of Cambridge, UK, received damehoods for services to medical research and the public understanding of science and services to plant science, science in society and equality and diversity in science, respectively.

Anne Willis, MRC Toxicology Unit, Leicester, UK, was named as Officer of the Order of the British Empire for her services to biomedical science and promoting the careers of women in science.

Gottfried Wilhelm Leibniz Prize

The German Research Foundation (DFG) has named **Jörg Vogel**, University of Würzburg, Germany, and **Karl-Peter Hopfner**, University of Munich, Germany, as two of ten recipients of the 2017 Leibniz Prize. Each researcher will receive 2.5 million euros to expand and support their research for a period of up to seven years.

Vogel receives the prize for his contributions to our understanding of regulatory RNA molecules in infection biology. Hopfner is honoured for his work in the field of DNA repair and the cellular detection of foreign nucleic acids.

Christian B. Anfinsen Award

Andreas Plueckthun from the University of Zurich, Switzerland, was named as the recipient of the Christian B. Anfinsen Award. Sponsored by the Protein Society, the award recognizes excellence and outstanding achievements in the multidisciplinary field of protein science. Plueckthun receives the award for his contributions to developing the first fully synthetic antibody library.

Order of Merit of Germany

Michael Brand, founding director of the Centre for Regenerative Therapies, Technical University Dresden (CRTD), Germany, has been honoured with the Order of Merit of Germany (Bundesverdienstkreuz 1. Klasse) for his extraordinary scientific work in the fields of stem cell research and developmental genetics.

Sjöberg Prize

The inaugural Sjöberg Prize has been awarded to **Tony Hunter**, Salk Institute for Biological Studies, La Jolla, USA, for his studies of cellular processes that have led to the development of cancer drugs. He shares the prize fund of one million US dollars (of which 900,000 US dollars should be used to fund future research) with co-recipient James P. Allison, The University of Texas MD Anderson Cancer Center, Houston, USA.

René Turpin Prize in Cancerology

The French Académie des Sciences de l'Institut de France has named **Daniel Metzger**, Institute of Genetics and Molecular and Cellular Biology (IGBMC), Illkirch, France, as the recipient of the René Turpin Prize in Cancerology. The prize is endowed with 15,000 euros.

Lifetime Achievement Award

The International Society of Photosynthesis Research honoured **Jean-David Rochaix**, Emeritus Professor at the University of Geneva, Switzerland with its Lifetime Achievement Award. Rochaix received the award for his contributions to the understanding of chloroplast biogenesis and photosynthesis.

Kuwait Prize for Applied Science in Food and Agriculture

Sophien Kamoun, The Sainsbury Laboratory, UK, has been awarded the 2016 Kuwait Prize for Applied Science in Food Agriculture for his research on plant pathogens. The award has been presented by the Kuwait Foundation for Advancement of Science since 1979.

ILANIT-Ephraim Katzir Prize

Hermona Soreq, The Hebrew University of Jerusalem, received the ILANIT-Ephraim Katzir Prize for her outstanding research achievements in the life sciences. The award is awarded every three years to a senior Israeli scientist, whose research has had exceptional impact and is endowed with 10,000 New Israeli Sheqel.

Accademia Nazionale dei Lincei presidencies

The Accademia Nazionale dei Lincei of Italy has elected **Maurizio Brunori**, Emeritus professor at the University of Rome la Sapienza as President of the Class of physics mathematics and natural sciences and Vice-President of the Academy.

UK Genome Stability Network Medal

Steve Jackson from The Gurdon Institute, Cambridge, UK was awarded the UK Genome Stability Network Medal for the realisation of the therapeutic potential of targeting the DNA-damage response. The medal has been awarded since 2008 in recognition of contributions to genome stability.

Helmholtz International Fellow Award

Sarah Teichmann from the Wellcome Trust Sanger Institute, UK, is one of five scientists to receive this year's Helmholtz International Fellow Award. In addition to receiving a prize of 20,000 euros, Teichmann will be invited to a research stay at the Helmholtz Zentrum München -German Research Center for Environmental Health.

Fellow of the Biophysical Society Award

Jonathon Howard, Yale University, USA, has been elected as Fellow of the Biophysical Society. The award honours the Society's distinguished members who have demonstrated sustained scientific excellence.

ERC Scientific Council

Paola Bovolenta, Autonomous University of Madrid, and Giulio Superti-Furga, Medical University of Vienna and CeMM Research Centre for Molecular Medicine of the Austrian Academy of Sciences, have been appointed as two of four new members of the Scientific Council of the European Research Council by the European Commission.

EMBO YOUNG INVESTIGATORS

Walther Flemming Medal

Kikuë Tachibana-Konwalski received the Walther Flemming medal for her outstanding research achievements. The prize, which is awarded by the German Society for Cell Biology, recognizes young scientists up to 38 years of age for outstanding scientific achievements from all areas of cell biology. It is endowed with a prize money of 2,000 euros.

EMBO INSTALLATION GRANTEES

L'Oréal-UNESCO International Rising Talents award

Joanna Sułkowska from the University of Warsaw, Poland, was named as one of the 2017 L'Oréal-UNESCO International Rising Talents. The grants were established by L'Oréal-UNESCO For Women in Science programme to highlight and support the achievements of women in the early stages of their scientific careers from countries in each region of the world.

Good Read – Publications from the EMBO community

Superantigens hyperinduce inflammatory cytokines by enhancing the B7-2/CD28 costimulatory receptor interaction

Raymond Kaempfer (EMBO Member) and colleagues PNAS | 18 October 2016 Doi: 10.1073/pnas.1603321113

Bicarbonate-induced redox tuning in Photosystem II for regulation and protection

Bill Rutherford (EMBO Member) and colleagues

PNAS | 25 October 2016 Doi: 10.1073/pnas.1608862113

Robust, universal biomarker assay to detect senescent cells in biological specimens

Vassilis Gorgoulis (EMBO Member) and colleagues Aging Cell | 17 November 2016 Doi: 10.1111/acel.12545 An ensemble of regulatory elements controls Runx3 spatiotemporal expression in subsets of dorsal root ganglia proprioceptive neurons

Yoram Groner (EMBO Member) and colleagues Genes & Development | 15 December 2016 Doi: 10.1101/gad.291484.116

Phosphatidylserine Ameliorates Neurodegenerative Symptoms and Enhances Axonal Transport in a Mouse Model of Familial Dysautonomia

Cil Ast (EMBO Member) and colleagues PLoS Genetics | 20 December 2016 Doi: 10.1371/journal.pgen.1006486

Coupling phenotypic persistence to DNA damage increases genetic diversity in severe stress

Naama Barkai (EMBO Member) and colleagues Nature Ecology & Evolution | 4 January 2017 Doi: 10.1038/s41559-016-0016 *In Vivo* Cleavage Map Illuminates the Central Role of RNase E in Coding and Non-coding RNA Pathways

Jörg Vogel (EMBO Member) and colleagues

Molecular Cell | 5 January 2017 Doi: 10.1016/j.molcel.2016.11.002

Gene Architectures that Minimize Cost of Gene Expression

Yitzhak Pilpel (EMBO Member) and colleagues Molecular Cell | 5 January 2017

Doi: 10.1016/j.molcel.2016.11.007

Generation of genome-scale metabolic reconstructions for 773 members of the human gut microbiota

Ines Thiele (EMBO Young Investigator) and colleagues Nature Biotechnology | 28 November 2016 Doi: 10.1038/nbt.3703

Communication between viruses guides lysis-lysogeny decisions

Rotem Sorek (former EMBO Young Investigator) and colleagues Nature | 26 January 2017 Doi: 10.1038/nature21049

Two EMBO Members honoured with Louis-Jeantet Prize for Medicine

Silvia Arber and Caetano Reis e Sousa are the 2017 recipients of the Louis-Jeantet Prize for Medicine. Neurobiologist Arber, University of Basel and Friedrich Miescher Institute, Switzerland, receives the honour for the elucidation of the neuronal circuits that control movement in mammals, and immunologist Reis e Sousa, The Francis Crick Institute, UK, for the role that dendritic cells play in sensing pathogen invasion and tissue damage.

The annual prize recognizes exceptional biomedical research in Europe. Each recipient receives 700,000 Swiss francs, of which 625,000 Swiss francs should be used to finance ongoing research. The two researchers will receive the prize at an award ceremony in Geneva, Switzerland, on 26 April 2017.

Since 2010, EMBO has promoted the research of the prize winners together with the Louis-Jeantet Foundation. As part of this partnership, *EMBO Molecular Medicine* featured two special articles written by the recipients.

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To read the articles, visit:

embomolmed.embopress.org/content/early/2017/01/24/ emmm.201607226 embomolmed.embopress.org/content/early/2017/01/24/ emmm.201607227



Sir Raymond Kenelm Appleyard (1922–2017)

EMBO's first Executive Secretary

By Georgina Ferry

MBO began as an idea enthusiastically endorsed by leading scientists from across Europe, but with no funding and no central administration. By offering to run it as a part-time job, Raymond Appleyard enabled it to become established while senior figures in the organisation set about obtaining the inter-governmental agreement that would secure its long-term future.

Appleyard, who died aged 94 on 22 January 2017, was born in Birtley, County Durham, UK, on 5 October 1922, the only child of Kenelm Charles Appleyard, an officer in the Royal Engineers (he rose to the rank of Major General), and his wife Monica Mary (née Louis). Bright and ambitious, Appleyard won a scholarship to Trinity College, Cambridge to read natural sciences, graduating with a first in physics. After wartime service in the Royal Signals, he returned to Cambridge to complete his PhD. In 1947 he married Joan Greenwood, a biochemist working on prostate cancer at Addenbrooke's Hospital in Cambridge.

In 1949 he crossed the Atlantic for a two-year postdoc in biophysics at Yale, after which he and Joan drove from New Haven to Pasadena with their six-week-old daughter to join the pioneering group of molecular biologists at Caltech led by Max Delbrück. There he was the first to demonstrate that when phage lambda entered a bacterium, it became integrated into the host chromosome. He briefly took his expertise in working with lambda to the genetics group at the Chalk River Nuclear Laboratories in Ontario, Canada.

Appleyard found his métier in scientific administration when, in 1956, he was unexpectedly invited to become secretary of the new United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) in New York. He loved the UN, which he saw as a 'beacon of hope', but like all staff had to move on after four years. In 1961 he moved to Brussels as Director, Biology Services in the directorate responsible for training at the European Atomic Energy Community (Euratom).

In his first Euratom five-year report, he wrote: "Real coherence needs to start from the roots. In a Europe in which, because of linguistic, national, institutional or other boundaries far too few people talk to each other, this means a continuous series of discussions, at the level of the individual research worker, between those who ... face the same technical problems." This was exactly the credo that was being developed by EMBO's founders. Appleyard was drawn into their circle by Adriano Buzzati-Traverso, an influential Italian geneticist who worked on the effects of radiation. Appleyard was invited to the founding meeting at Ravello in September 1963, but was unable to attend: instead he sent a memo outlining his views on the proposals for a federal organisation (in favour) and a laboratory (against).

In December 1963, Appleyard hosted and paid for the first meeting of EMBO's Federal Organisation subcommittee at Euratom's offices. Jeffries Wyman, EMBO's first Secretary General, reported to Max Perutz, its first Chairman, that Appleyard was "an extremely nice person whom I believe we can count on to help us in any way he can through Euratom." Two years later, after Perutz and others had secured a grant from the Volkswagen Foundation, Appleyard was formally appointed Executive Secretary of EMBO.

As a family man, he felt he could not give up a permanent post to take on something that only had three years' funding. So with the European Commission's blessing, he kept his post at Euratom and ran EMBO extremely efficiently as a part-time job. "I called my key staff together," he remembered, "and said... I would like to take it, but it means you all doing a bit more work, are you willing? And they all said yes." Appleyard and his team did all the administration of EMBO's fellowships, courses and discussion meetings, reporting to the Chair or other EMBO Council members. Appleyard also provided administrative support to the European Molecular Biology Conference (EMBC) once it was established in 1969, working alongside John Kendrew. He helped to draft the document recommending that the German science ministry choose Heidelberg over Munich for the location of EMBL. The same year, 1973, on the UK's admission into the European Economic Community, he was promoted to Director General, Scientific and Technical Information and Information Management at the European Commission. It was no longer practical for him to run EMBO, and he was succeeded as EMBO Executive Secretary by John Tooze.

On his retirement from the European Commission in 1986 Appleyard received a knighthood, and settled in East Sussex. His wife Joan died in 2015. He is survived by his children Carol Geldart, Catherine Appleyard and Mark Appleyard.

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EMBO EVENTS

Practical Courses

DE-Cologne | 26 March – 7 April 2017 | P. Schulze-Lefert **Plant microbiota**

DE-Heidelberg | 2–8 April 2017 | E. Kerkhoff

Mechanisms of actin-dependent force generation

DK-Odense | 20–27 April 2017 | M.R. Larsen Characterization of posttranslational modifications in cellular signalling

PT-Faro | 24–29 April 2017 | T.M. Embley Tree building: Advanced concepts and

practice of phylogenetic analysis

DE-Heidelberg | 24–30 April 2017 | Q. Deng Single cell omics

IT-Napoli | 18–26 May 2017 | V. Colonna

Population genomics: Background and tools

GR-Thessalonica | 5–17 June 2017 | C. Ouzounis

Bioinformatics and genome analyses
DE-Heidelberg | 13-23 June 2017 |

P. Ronchi Advanced electron microscopy for cell

biology UK-London | 18 June – 1 July 2017 |

C. Kiecker Developmental neurobiology:

From worms to mammals

UK-Canterbury | 25 – 30 June 2017 | M. Geeves

The application of kinetic methods to dynamic biological systems

FI-Helsinki | 2–9 July 2017 | E. Ikonen **Protein – lipid interactions: Advanced experimental and computational tools**

SE-Fistkebäckskill | 2–15 July 2017 | D. Arendt

Marine Animal Models in Evolution and Development: Single-cell approaches and genome editing in marine neurobiology

UK-Didcot | 6–14 July 2017 | N. Burgess-Brown **High-throughput protein production**

and crystallization DE-Dresden | 10-20 July 2017 |

M. Sarov Mouse genome engineering

UK-Norwich | 16–28 July 2017 | S. Marée

Multi-level modelling of morphogenesis

NL-Wageningen | 24–28 July 2017 | C. Welte

Breathless microbes: Techniques and theory in anaerobic microbiology

CH-Basel | 5–12 August 2017 | G. Stephan Structure, dynamics and function of biological macromolecules by NMR

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Workshops

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DE-Dresden | 23 – 26 April 2017 | N. Vastenhouw **Awakening of the genome:**

The maternal to zygotic transition

ES-Palma de Mallorca | 23–26 April 2017 | E.F. Wagner Metabolic disorders and liver cancer

IT-Santa Margherita di Pula | 8–12 May

2017 | F. Bard
Signalling and endomembranes

ES-Sitges | 24–27 May 2017 | S. Herzig Brown adipose tissue

ES-Salamanca | 28–31 May 2017 | M. Del Val

Antigen processing and presentation
UK-Edinburgh | 6-9 June 2017 |

J. Welburn **Dynamic kinetochore**

CN-Xi'an | 2-5 July 2017 | Q. Chen Mitochondrial quality control

DE-Berlin | 10–15 July 2017 | C. Faulkner Intercellular communication in development and disease

DE-Planegg-Martinsried | 6-8 September 2017 | S. Hake Histone variants: Molecular functions in health and disease

IT-Turin | 8–10 September 2017 | Z.H. Gumus

Integrating genomics and biophysics to comprehend functional genetic variation

ES-Girona | 10–14 September 2017 | C. Mauri **To-B or not to-B: B-cells in health and**

IT-Naples | 13–15 September 2017 | G. Bernardi Evolution in the time of genome architecture

SI-Bled | 16–18 September 2017 | B. Turk

Mitochondria, apoptosis and cancer

Conferences

disease

DE-Heidelberg | 3–6 May 2017 | A. Akhtar

Chromatin and epigenetics

GR-Heraklion | 7–10 May 2017 | C. Hoogenraad Cell biology of the neuron: Polarity, plasticity and regeneration

Editorial

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Print & web layout Sandra Krahl ES-Sant Feliu de Guixols | 14–19 May 2017 | A. Bertolotti Protein quality control: Success and failure in health and disease

DE-Heidelberg | 23-26 May 2017 | D. O'Carroll

Advances in stem cells and regenerative medicine

ES-San Feliu de Guixols | 4-9 June 2017 | F. Martín-Belmonte **Cell polarity and membrane dynamics**

FR-Paris | 13–16 June 2017 | M. Yaniv Hijacking host signalling and epigenetic mimicry during infections

UK-Oxford | 10–13 July 2017 | C. Norbury

Eukaryotic RNA turnover RU-Moscow | 16–23 July 2017 |

V. Belousov **Redox biology**

IT-Barga | 23–27 July 2017 | A. Ephrussi RNA localisation and local translation

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DE-Bad Staffelstein | 23–28 July 2017 | D. Klostermeier Helicases and nucleic acid-based machines: Structure, mechanism and regulation and roles in human disease

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HR-Hvar | 27 August – 1 September 2017 | I. Tolić **Meiosis**

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ES-Alicante | 7–10 September 2017 | V. Tiwari

Gene regulatory mechanisms in neural fate decisions

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DE-Heidelberg | 11–13 May 2017 | T. Alexandrov

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DE-Heidelberg | 27–30 June 2017 | P. Cossart

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Mechanical forces in biology DE-Heidelberg | 13–16 September

2017 | E. Izaurralde The non-coding genome

DE-Heidelberg | 3–7 October 2017 | J. Ellenberg Seeing is believing: Imaging the processes of life

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Molecular architecture, dynamics and function of biomembranes

GR-Spetses | 24 September – 1 October 2017 | D. Otzen Proteins and organized complexity

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D. Koester



RESEARCH ARTICLE

How plants become 'Not Like Dad'

A common strategy to create highyielding plants is hybrid breeding crossing two different inbred lines to obtain characteristics that are superior to each parent. Creating inbred lines can be achieved by self-crossing for numerous generations. In maize, the use of so-called haploid inducers provides a shortcut to this time-consuming procedure. Pollination of female flowers with pollen of an inducer strain generates haploid offspring carrying solely the mother's chromosomes. Treating these haploid plants with colchicine causes chromosome doubling and will lead to homozygous diploid plants - the desired product of inbreeding - in just one generation.

A study by Gilles *et al.*, published in *The EMBO Journal*, sheds light on the genetics behind haploid induction. The researchers identified the gene that causes the phenomenon and termed it *Not Like Dad* because its dysfunction induces embryos without genetic contribution from the father. Understanding the genetics behind haploid induction will help translate this powerful breeding tool to other species.

Loss of pollen-specific phospholipase Not Like Dad (NLD) triggers gynogenesis in maize

Laurine M Gilles, Abdelsabour Khaled, Jean-Baptiste Laffaire, Sandrine Chaignon, Ghislaine Gendrot, Jérôme Laplaige, Hélène Bergès, Genséric Beydon, Vincent Bayle, Pierre Barret, Jordi Comadran, Jean-Pierre Martinant, Peter M. Rogowsky, Thomas Widiez Read the paper: emboj.embopress. org/content/early/2017/02/22/ embj.201796603



SCIENTIFIC REPORT

Bypassing a Hippo

In healthy development, all organs grow to the correct size and maintain this size throughout life. The Hippo signalling pathway controls organ size by regulating cell division and cell death. More precisely: Hippo inhibits the activity of YAP, which in turn drives growth-promoting transcription. Two publications in EMBO Reports have now shown that a previously unknown regulator of YAP can override Hippo activity. As loss of organ size control is linked to cancer and degenerative diseases, these discoveries may pave the way for future therapeutic strategies.

According to previous models, Hippo activity indirectly leads to the phosphorylation of YAP on Serine residue 127 (Ser127), keeping YAP out of the nucleus and inactive. The papers by Moon *et al.* and Hong *et al.* now challenge this dogma. They show, through different approaches, that Nemo-like-kinase (NLP) can phosphorylate YAP on Ser128, promoting YAP to enter the nucleus and thus overriding Hippo activity.

Phosphorylation by NLK inhibits YAP-14-3-3-interactions and induces its nuclear localization

Sungho Moon, Wantae Kim, Soyoung Kim, Youngeun Kim, Yonghee Song, Oleksii Bilousov, Jiyoung Kim, Taebok Lee, Boksik Cha, Minseong Kim, Hanjun Kim, Vladimir L Katanaev, Eek-hoon Jho Read the paper: embor.embopress.org/ content/18/1/61

Osmotic stress-induced phosphorylation by NLK at Ser128 activates YAP Audrey W Hong, Zhipeng Meng, Hai-Xin Vuan Stream W Blueffe Surgets Mars

Yuan, Steven W Plouffe, Sungho Moon, Wantae Kim, Eek-hoon Jho, Kun-Liang Guan

Read the paper: embor.embopress.org/ content/18/1/72





RESEARCH ARTICLE

When the gut affects vision

Age-related macular degeneration (AMD) is the leading cause of blindness in people above the age of 60. Obesity is a well-known risk factor for the development of AMD, but until recently the mechanisms behind this connection were ill-defined. A study by Andriessen *et al.*, published in *EMBO Molecular Medicine* sheds light on this issue.

The researchers show that a change in the intestinal flora. induced by high-fat diet, is the driving force behind disease progression. Changes in the bacterial composition of the gut can cause long-term low-grade inflammation in the whole body, which is reflected by an increase of pro-inflammatory cytokines. This, in turn, triggers an immune response in the retina that leads to increased neovascularization, a characteristic feature of late-stage AMD. The study suggests that modifying the gut microbiome, either through diet or by other means, could be a potential new therapeutic strategy for AMD patients.

Gut microbiota influences pathological angiogenesis in obesity-driven choroidal neovascularization

Elisabeth MMA Andriessen, Ariel M Wilson, Gaelle Mawambo, Agnieszka Dejda, Khalil Miloudi, Florian Sennlaub, Przemysław Sapieha

Read the paper: embomolmed.embopress. org/content/8/12/1366



RESEARCH ARTICLE

Protective "obese" microbiota

The intestine is populated by a plethora of microorganisms collectively called gut microbiota. An unhealthy diet changes the composition of the gut microbiota and it is generally assumed that this maladaptation, called dysbiosis, triggers disease. A study by Nicolas *et al.*, published in *Molecular Systems Biology*, challenges this view. The researchers show that transplanting dysbiotic ("obese") microbiota into healthy individuals could protect against metabolic diseases.

The impact of gut microbiota on disease development has previously been investigated using mostly axenic mice that have no gut microbiota, a dysfunctional gut barrier and immune system. Colonizing the gut of axenic mice with microbiota from obese mice causes weight gain and obesityrelated phenotypes. However, when Nicolas et al. transplanted dysbiotic microbiota to normal, healthy mice instead they observed beneficial effects on metabolism. This suggests that – as long as the gut is healthy and the immune system functional - dysbiotic microbiota can protect from metabolic dysfunctions induced by a high fat diet.

Transfer of Dysbiotic Gut Microbiota Acutely Decreases Hepatic PEPCK and GGPase Activity and Prevents HFD-impaired Glucose Metabolism Simon Nicolas, Vincent Blasco-Baque, Audren Fournel, Jerome Gilleron, Pascale Klopp, Aurelie Waget, Franck Ceppo, Alysson Marlin, Roshan Padmanabhan, Jason S Iacovoni, François Tercé, Patrice D Cani, Jean-François Tanti, Remy Burcelin, Claude Knauf, Mireille Cormont, Matteo Serino Read the paper: msb.embopress.org/ content/13/3/921

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Paul Nurse

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