

ISSUE 42 EMBO encounters

Scientists from
22 countries elected

Meet the 56 new EMBO Members

PAGES 6-7



Celebrating 50 years EMBC

Five decades of funding
Symposium
marks EMBC
anniversary

PAGES 10-13



M. Madan Babu and Paola Picotti honoured Gold Medal awarded to two systems biologists

PAGE 3

Member mentors Young Investigator
Three mentoring pairs share their stories

PAGES 8-9

Plan S implementation
EMBO responds to publication
of updated guidance

PAGE 14

Life Science Alliance
Spotlight on the newest journal

PAGE 16

EMBO news

Meet the EMBO Gold Medal recipients
Page 3

Gold Medal interview with Madan Babu
Page 4

Gold Medal interview with Paola Picotti
Pages 5

56 new EMBO Members elected
Pages 6–7



Mentoring across the EMBO community
Pages 8–9

Celebrating 50 years of the EMBC
Pages 10–13

Introducing the latest training course
Page 15

Fellows talk science and careers in
Heidelberg
Page 15



Publishing alliance comes of age
Page 16

Science policy

EMBO responds to updated Plan S guidance
Page 14

Roundup from the World Conference on
Research Integrity
Page 14

EMBO community



Updates from across Europe
Pages 17–19

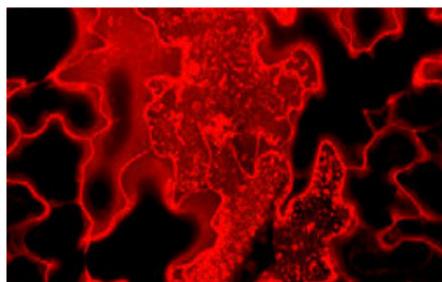
Awards and publications

Achievements and papers by members of
the EMBO community
Page 20

EMBO events

Upcoming courses, workshops and
conferences Page 21

Fresh from EMBO Press



Five of EMBO's latest publications at a
glance Page 22



Editorial

For those of us who know EMBO in the present day – a respected organization with more than 1800 members, stable funding and strong connections throughout Europe and the world – it is easy to forget that in the early days EMBO's financial future was far from secure.

After a grant from the Volkswagen Stiftung funded the EMBO Fellowships for the first five years, stable and, importantly, independent funding was only achieved when EMBO's intergovernmental funding body, the European Molecular Biology Conference (EMBC) was established in 1969.

Twelve European countries initially signed the agreement that brought the EMBC to life on 13 February 1969. Marking the 50th anniversary this year, we invited the EMBC delegates from all 30 EMBC Member States to a celebratory symposium in June (p 10-13).

You only need to take a look at the page overleaf to note that the EMBC anniversary was not the only reason for celebrations during the last months. It is a pleasure to announce Madan Babu and Paola Picotti as the recipients of this year's EMBO Gold Medal.

For the first time this year we will present the Gold Medals at the EMBO Members' Meeting in October. We announced the newly elected members in June (p 6-7), and preparations for the meeting are well underway. I look forward to welcome many of our 56 new EMBO Members and their proposers in Heidelberg for this occasion.

Maria Leptin
Director, EMBO



Two systems biologists receive EMBO Gold Medal

Award recognizes the work of M. Madan Babu and Paola Picotti

EMBO awards the Gold Medal annually to honour the exceptional achievements of selected life scientists under the age of 40 in Europe. The medal stands for recognition of research excellence and the importance of young independent group leaders in creating a strong research environment. M. Madan Babu and Paola Picotti will each receive a gold medal and an award of 10,000 euros.

"It is a great recognition"
– Madan Babu

M. Madan Babu receives the award for his fundamental contributions to the field of computational molecular biology, specifically for his discoveries in the areas of G protein-coupled receptor (GPCR) signalling and intrinsically disordered proteins.

Madan Babu, who is based at the MRC Laboratory of Molecular Biology, Cambridge, UK, began using computational methods to study biological questions during his PhD. His recent work on GPCRs explains why people respond differently to certain drugs, which has direct implications for personalized and precision medicine. Babu also discovered the roles of disordered proteins in biology and disease. The high-throughput screen he and his team developed underpins the importance of disordered regions and their functions.

EMBO Member Veronica van Heyningen, University College London, UK, says that Madan Babu "has an impressive ability to formulate critical questions clearly and then develop

bioinformatics approaches to interrogate available genomic, transcriptomic and proteomic data mountains, to develop major new insights into biological mechanisms."

Receiving the EMBO Gold Medal "is a great recognition of the work we are doing, which would not be possible without the past and present members of my research group" says Babu. "It is also recognition of the contribution of knowledge to the field of molecular biology that comes from computational work. That's a great feeling."

Paola Picotti is recognized for conceptual and technological breakthroughs in the mass spectrometric analysis of proteins and proteomes, specifically for enabling the analysis of protein conformational changes in situ and on a proteome-wide scale.

"I feel very honoured"
– Paola Picotti

Picotti's focus on mass spectrometry began during her PhD, and she contributed to developing targeted proteomics during her postdoctoral fellowship. Her group at ETH Zurich in Switzerland recently used structural proteomics strategies to characterize the determinants of proteome thermostability and to map protein-metabolite interactions.

EMBO Member Anne Bertolotti, MRC Laboratory of Molecular Biology, Cambridge, UK, says about Picotti: "Paola is recognized as a leader at multiple levels and across disciplines. The

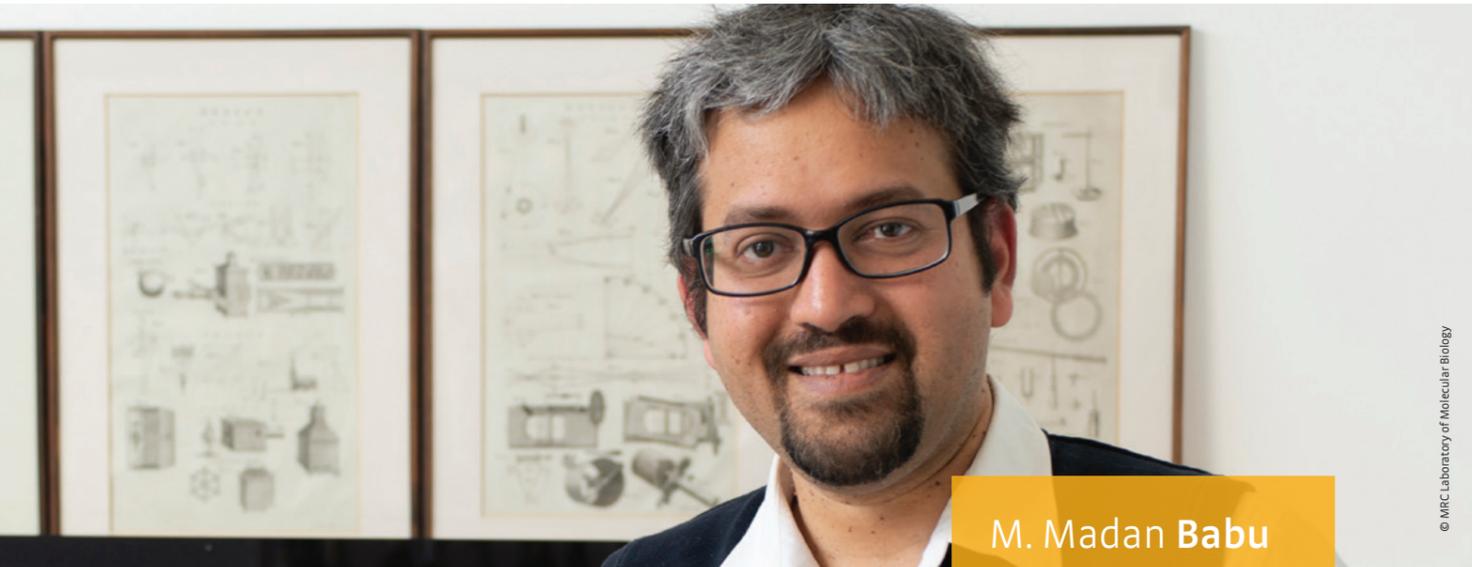
limited proteolysis method she developed already pushed the boundaries of our knowledge significantly. We can now examine conformational changes, which brings our abilities to understand protein functions in their complex cellular environment to an entirely new level."

Picotti says that "it is wonderful to get such recognition, and I accept the award on behalf of all my group members who contributed to this work." She adds: "I feel very honoured to receive it alongside Madan Babu, whose work on intrinsically disordered proteins inspired parts of our work."

About the EMBO Gold Medal

- The EMBO Gold Medal is awarded annually to life science researchers under the age of 40, who are currently working in one of the EMBC Member States.
- EMBO Members and EMBO Young Investigators are invited to nominate candidates for the medal. To be considered, a nomination must be supported by one proposer and two sponsors.
- The deadline for nominations for the 2020 award is 1 February 2020.

More information:
embo.org/funding-awards/gold-medal



M. Madan Babu

© MRC Laboratory of Molecular Biology

A computational approach to biological questions

EMBO Gold Medal recipient M. Madan Babu talks about his work on G-protein coupled receptors and disordered proteins, the importance of collaboration and embracing new ideas

By Rosemary Wilson

What motivated you to pursue a computational approach to biological research?

Around the time I started my degree we experienced a revolution in genomics, in structural biology, and in sequencing technologies—every few years there was another wave of technological advancement and understanding. An enormous amount of data was being produced, describing various biological entities and processes from diverse organisms. It started to become clear that by understanding and integrating these diverse types of data, we can ask and answer fundamental questions. I found this cross-over between computational science and biology to be exciting and unique.

You have made some important discoveries about a medically important class of proteins called GPCRs. What insights did your work reveal?

G-protein coupled receptors sit across the cell membrane and transmit signals into the cell. There are about 800 GPCRs encoded in the human genome and they regulate virtually every aspect of human physiology. Given their central role, over one-third of all FDA-approved drugs target members of this family. In the last decade or so, more than 300 structures of different GPCRs have been published. At the same time, there has been excitement in being able to sequence entire exomes and genomes of individuals to understand natural variation in human populations.

By integrating genomics data and GPCR structure data we found that several GPCRs targeted by drugs show extensive genetic variation in the human population. We showed that this variation occurs in parts of the GPCR protein that matter for the drug response. For example, we

observed polymorphisms in the GPCR targeted by morphine and painkillers, which may explain why antidotes to an opioid overdose may not always work. This is a good example of how an integrative, data-science based approach can provide new insights and potentially have an impact on society and healthcare.

Your work has changed our understanding about disordered proteins. What were the key findings of your studies?

About 40% of the proteins in eukaryotes are unlikely to adopt a defined structure on their own but are still functional. That really got our attention. Why are they so prevalent? How do they function? How are they integrated into cellular networks and contribute to different phenotypes?

We have shown that disordered proteins play a role in rewiring protein interaction networks in both space and time, for example by segregating specific proteins to one part of the cell, or ensuring that two proteins only interact at a certain time during development. Disordered proteins can therefore influence the function and health of the cell and the whole organism. We also found that cells tightly regulate the abundance of disordered proteins. This helps to explain why mutations that affect the abundance of these proteins are implicated in diseases such as cancer and neurodegeneration.

Your research encompasses many different disciplines and biological questions. How important is collaboration in your work?

Collaboration is critical on many levels. Talking to colleagues with different backgrounds really sharpens my own thinking. And, for example, we also collaborate a lot within the group. We have

people working on developing computational approaches at the molecular level, systems level and at the genome level. Having everyone together is valuable as we not only identify knowledge gaps but can also offer new insights. It's been so important to have people from different backgrounds and trainings within the group. This diversity has been a key factor for several of our projects.

What advice do you pass onto your students?

Spend time getting to know how the data was generated, and its limitations before jumping in. Frame the question clearly. This is half the problem solved and helps you from getting distracted.

I believe it is important to embrace failure. You might think you've lost a lot of time, but you have acquired a lot of experience and expertise understanding the data and the scientific question. That is a privileged position to be in.

Finally, have confidence in what you know but be open-minded. To push the boundaries of conventional wisdom, we have to question the basic facts and be prepared to embrace new ideas.

What does receiving the EMBO Gold Medal mean to you?

It is a great recognition of the work we are doing, which would not be possible without the past and present members of my research group and the generous, long-term funding from the Medical Research Council's Laboratory of Molecular Biology. It is also recognition of the contribution of knowledge to the field of molecular biology that comes from computational work. That's a great feeling.



Paola Picotti

© Katarzyna Nowak

Revealing the changing shapes of proteins

EMBO Gold Medal recipient Paola Picotti discusses her work on protein-molecule interactions and protein aggregation, her fascination with complex problems and the need to feel excited

By Rosemary Wilson

What motivated you to go into scientific research?

When I was young, I felt a sense of unease when I did not understand something, but also excitement once I had the chance to dig down to where things were puzzling. This fascination for complex problems attracted me to science and research.

When did you first become fascinated by proteins?

I remember the moment very clearly. In a lecture during my undergraduate studies, our biochemistry professor showed us an image of a gigantic protein structure. It was the ATP synthase, a protein complex crucial for the functioning of our cells. I was fascinated. I thought it was beautiful, complex and mysterious. I remember thinking, 'wow, I could spend the rest of my life studying how this, and other proteins work'. And I'm very lucky that this seems to have happened!

You developed an approach to analyse structural changes in proteins. What makes the limited proteolysis coupled to mass spectrometry, or LiP-MS, method so powerful?

Protein structural changes are largely studied *in vitro*, for which you must first identify a specific protein for analysis. The LiP-MS method, however, is a biochemical and mass-spectrometric approach that can identify proteins that undergo a structural change directly from a complex biological sample. It can be used to systematically identify proteins that change conformation, unfold, or aggregate in cells treated in different ways. Since binding of a small molecule also affects the structure of a protein, the approach can be used to identify interactions between proteins and small molecules, including identification of drug targets, and binding sites.

You used the LiP-MS method to tackle some key topics, such as protein stability and metabolite-protein interactions in their native environments. What did these studies reveal?

In the first study we looked at the thermal denaturation profiles of around 8000 proteins from several species. We found that when cells die of heat, a few proteins with very crucial roles are lost due to denaturation. Proteins in thermophilic bacteria, however, undergo these changes only at higher temperature and are less prone to aggregation. The results contributed to our understanding of why some cells survive high temperatures and others don't.

For the second study we produced a map of 1700 metabolite-protein interactions; 1400 of which were new. These interactions are functionally very relevant, since a metabolite can change the functional state of a protein completely, for example turning an enzyme on or off. This map provided several new insights, for example, that the catalytic sites of some enzymes are promiscuous and can bind more metabolites than previously thought.

What research is your lab focussing on now?

My lab studies the molecular basis of protein aggregation diseases such as Parkinson's disease. These diseases are characterised by proteins that undergo a structural change, making them prone to form aggregates. We are currently studying the structures of aggregates and aggregation intermediates directly in cellular extracts and tissues. And we are asking whether altered protein structures in biological fluids such as cerebrospinal fluid can be used as a new class of biomarkers for Parkinson's disease.

What advice do you pass on to your students?

Firstly, I feel it is important that students use their Ph.D. to learn how to think critically and independently. Secondly, they should pick a topic that excites them, and then dig in. If there is no excitement, then there won't be enough motivation to keep going. We all know this!

And finally, I feel it is important that students develop a positive attitude towards science and scientific results. Sometimes a failed experiment contains useful information, and sometimes a failed hypothesis can mean an even more exciting discovery.

How do you support others in balancing family and work life?

I believe it is possible to be a dedicated parent and an engaged scientist and I am passionate about supporting others in reconciling family and work life. That's why I started a project to finance emergency childcare in my group. Especially in the winter, young children can often be sick, and this can really affect productivity. I am a mother of two and I know that this can be challenging. Maybe the support we provide does not completely solve the issue, but I hope it contributes to creating a supportive work atmosphere.

What does receiving the EMBO Gold Medal mean to you?

It is wonderful to get such recognition, and I accept the award on behalf of all my group members, past and present, who contributed to this work. I also feel very honoured to receive it alongside Madan Babu, whose work on intrinsically disordered proteins inspired parts of our work.

Welcome to the new EMBO Members

56 researchers from 22 countries elected to the membership

In June, EMBO announced that 56 life scientists were elected to its membership. The 48 new EMBO Members reside in 17 Member States of the European Molecular Biology Conference (EMBC), EMBO's intergovernmental funding body. The eight new EMBO Associate Members are researchers currently working in Argentina, Australia, Japan, Singapore and the USA. 24 of the new members are women.

Ever since the very first EMBO Council, chaired by Max Perutz, was tasked with selecting and inviting the first EMBO Members in 1963, new members are nominated and elected by the existing membership. This year, participation was especially high, with 65% of the eligible EMBO Members taking part in the election process.

EMBO will formally welcome its new Members and Associate Members at the annual Members' Meeting in Heidelberg between 29 and 31 October 2019.



Andrea Ablasser
Recognition of DNA by the innate immune system
Lausanne, Switzerland



Sonja-Verena Albers
Molecular and cellular biology of archaea
Freiburg, Germany



Roberto Bassi
Light use efficiency in plants and algae
Verona, Italy



Peter Baumann
Genome stability and chromosome dynamics
Mainz, Germany



Richard Benton
Chemosensory neurobiology and evolution
Lausanne, Switzerland



Judith Berman
Genomic & epigenetic stress response mechanisms
Tel Aviv, Israel



Fernando J. Pitossi*
Inflammation in the brain and cell differentiation
Buenos Aires, Argentina



Lalita Ramakrishnan
Tuberculosis pathogenesis and immunity
Cambridge, United Kingdom



Katrin Rittinger
Mechanisms of ubiquitin-dependent signalling
London, United Kingdom



Aurélien Roux
Mechanics of biological surface morphogenesis
Geneva, Switzerland



Rickard Sandberg
Single-cell genomics to decipher gene regulation
Stockholm, Sweden



James Sharpe
Multicellular systems biology
Barcelona, Spain



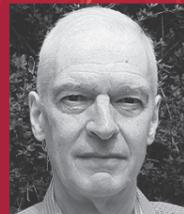
Melanie Blokesch
Bacterial pathocology and evolution
Lausanne, Switzerland



Wout Boerjan
Engineering lignin biosynthesis and structure
Gent, Belgium



Alain Chédotal
Axon guidance mechanisms
Paris, France



Peter R. Cook
Transcription factories and gene regulation
Oxford, United Kingdom



Frédéric J. de Sauvage*
Targeting developmental pathways in cancer
San Francisco, United States



Nynke H. Dekker
Single-molecule studies of replication
Delft, The Netherlands



G.V. Shivashankar*
Mechanobiology of genome architecture & regulation
Singapore, Singapore



Bruno Silva-Santos
T cell functions in healthy and malignant tissues
Lisbon, Portugal



Nicole Soranzo
Human genome variation in health and disease
Cambridge, United Kingdom



Jennifer L. Stow*
Protein trafficking, signalling and inflammation
Brisbane, Australia



Robert Tampé
Macromolecular complexes in adaptive immunity
Frankfurt, Germany



Manuel Théry
Cell architecture and polarity
Paris, France



Andrzej Dziembowski
Post-transcriptional regulation of gene expression
Warsaw, Poland



I. Sadaf Farooqi
Mechanisms controlling human energy homeostasis
Cambridge, United Kingdom



George A. Garinis
Genome instability, cancer and aging in mammals
Heraklion, Greece



Fanni Gergely
Centrosomes in mitosis, development and disease
Cambridge, United Kingdom



José Luis Gómez-Skarmeta
Gene regulation during development and evolution
Sevilla, Spain



Thomas Gregor
Physics of biological function
Paris, France and Princeton, United States



Miguel Torres
Mechanisms of organ development and regeneration
Madrid, Spain



James M. Turner
Sex chromosome biology
London, United Kingdom



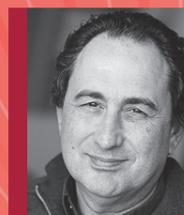
Štěpánka Vaňáčová
RNA modifications in RNA processing and decay
Brno, Czech Republic



Éric Vivier
Innate lymphoid cells
Marseille, France



Julia Vorholt
Microbial physiology
Zurich, Switzerland



Patrick Wincker
Ecosystem and evolutionary genomics
Eury, France



Barbara Ann Halkier
The role of plant specialized metabolism
Copenhagen, Denmark



Yoshihide Hayashizaki*
Omics science by the international FANTOM Consortium
Saitama, Japan



Birgitta Henriques Normark
Microbial-host interactions in health and disease
Stockholm, Sweden



Elina Ikonen
Lipid transport and storage in human cells
Helsinki, Finland



Sten Eirik W. Jacobsen
Normal and leukaemic hematopoietic stem cell biology
Stockholm, Sweden and Oxford, United Kingdom



Peter Jonas
Structure and function of central synapses
Klosterneuburg, Austria



Claire Wyatt
Tasting and sensing flow of the cerebrospinal fluid
Paris, France



Joanna Wysocka*
Gene regulation in human development, disease & evolution
Stanford, United States

*EMBO Associate Member



Mentoring across the EMBO community

As part of the career development opportunities offered by the EMBO Young Investigator network, young group leaders can choose an EMBO Member as a mentor. Three mentoring pairs talked to Kathy Weston about how their relationship influenced their approach to science and running an independent lab.

Nuno Barbosa Morais thinks that an early visit by his EMBO mentor Chris Ponting was a turning point in his lab's life: "Chris had a huge impact on how the lab evolved," says Barbosa Morais. "He did a great job helping me to see what it was that we were doing well, and what we could improve on, and that really boosted morale in the lab. I felt a huge gain in momentum after his visit."

Exploring common grounds

For Barbosa Morais, who was awarded an EMBO Installation Grant in 2015 to help him set up his new lab at the Instituto de Medicina Molecular in Lisbon, Portugal, picking Ponting as a mentor was, as he says, "a no-brainer. We're both computational biologists, and I related to Chris starting like me as a physicist. I knew right away that Chris was someone I could talk to."

Ponting is also very happy with the relationship: "I contributed to Nuno's field of disease transcriptomics in the early days but then moved on. And reconnecting to it has validated for me that it was fine that I didn't linger there," he says. "Nuno is doing great work, including things that I probably wouldn't ever do, so to see his area flourish is incredibly interesting scientifically."

Both agree that one of the perils of being a computational biologist is the temptation to spread oneself too thinly. "Chris has faced similar dilemmas, in terms of how much we should collaborate and how much we should focus on our own projects", says Barbosa Morais. "The fact that he's successful and has dealt with the same problems, makes him a really good role model for me."

Pointing out the pitfalls of their field has also helped Ponting: "My rationale as a mentor has always been to try to ensure other people don't fall into the pits I've encountered, but advising Nuno has made me think whether the advice I'm giving is what I'm actually putting into practice," he says. "I've realised I may have let things go a little bit!"

More than science

Ponting's mentoring goes beyond discussions about science strategy and navigating departmental politics into how to manage another vital aspect of being a successful scientist: "Running a group is a lonely, and sometimes alarming, experience for new lab heads, but it's important to get it right, as it allows you to do the science in the best way possible," he says. "So many people think that the most important thing is the science, and that all the issues around it are trivial by comparison, but it's not true."

This stance is also close to Barbosa Morais's heart: "I really feel a responsibility for launching the scientific career of the junior people who work with me, and the fact that this has been a big part of my discussions with Chris has been a very pleasant surprise."

Asked what he's found most surprising about Ponting, Barbosa Morais says that his willingness to admit to past failure has been revelatory. "The number of pitfalls in Chris' career is probably reduced compared to other successful scientists, but he's willing to discuss them and to actually use them in a positive way. It was really after meeting Chris that I realised that when things don't go as well as planned, it's still okay: I know now that a crisis can actually bring an opportunity, and be a source of inspiration."

Yellowstone National Park, as a model to study how complex cells arise.

"When I asked about Buzz I heard that he was an exceptional scientist and was great to talk to, so he seemed like a perfect choice," says Guse. Despite saying that his most useful piece of advice to potential mentees is "learn to say no," Baum agreed to become Guse's mentor "because when we started talking it was clear we were both doing things that are a bit whacky, and I quite like whacky!"

"When you step outside an established field and go your own path, as we both have, it takes time to develop tools and so forth, and whilst people give you some time, you also have to publish to show you have used the trust and money they've invested in you to deliver something," Baum says.

"Annika and I had both been thinking about this a lot before we met."

Guse agrees, and also highlights the potential isolation of starting in a new discipline. "Finding a new community is hard when you go it alone, and if you try to talk to people who don't work in emerging models, they're bored by the difficulties you're facing every day, and lose interest rapidly."

Exploring joint projects

The two hit it off so well that earlier this year, Guse helped Baum organize an EMBO Young Investigator student workshop in Palestine. "It worked out pretty well", she says. "I knew it would be a good learning experience and I would meet interesting people, but it also felt like a once in a lifetime opportunity."

Buzz Baum



Annika Guse



Having Baum as an external mentor has given Guse a new confidence: "The kind of advice I get from Buzz is really helpful," she explains. "Sometimes I'm not secure enough to push something through, or I shy away because I don't want to annoy anybody. Buzz gives me support on new ideas and hard decisions, including dealing with lab members, when you want to be fair but you still want to convey your own vision."

Baum says that he and Guse have a very similar personal philosophy, which is why the relationship works so well: "Mentoring schemes sometimes don't work because so much depends on how you want to do science. There's no one way to succeed, but whatever path you choose, there will be lots of barriers to overcome and labyrinths to navigate. So, everyone needs help to be the best scientist they want to be, and you can give that help most effectively if you agree on what that best way is."

"Science is a community endeavour," concludes Baum, "and I really enjoy the coincidence that I'm mentoring someone who is studying symbiosis, where coming together and sharing things is a way of life!"

in lipid biochemistry, which is a very different area to what my group works on; I've learnt a lot about the field from the discussions we've had."

Nakamura thinks the scheme has put his interactions with Coupland on a new footing: "The fact that it's an official part of the EMBO Programme makes me take it very seriously," he says. "During my yearly visit, I always try to bring a new and interesting story to show George, and that really drives me to work very hard for the rest of the year!"

Learning for both parties

The career structures in Taiwan and Germany are quite different, so that the focus of the mentoring is predominantly scientific: "George spends a lot of time talking to me about my work, and his comments and questions are really refreshing," says Nakamura. "It's a great opportunity to look at the science from a different aspect." However, Coupland thinks that the differences between the

two countries have also been illuminating: "In following Yuki's career, I've learnt interesting things about how other systems treat their young researchers and nurture their careers," he says.

Both Nakamura and Coupland intend to maintain their relationship for the foreseeable future. "I'm going to continue my yearly visit because it's simply exciting," says Nakamura, "and I'm always looking for a chance to invite George to Taiwan. I hope the connection will get tighter and tighter."

Coupland agrees: "Yuki combines his dedication and deep knowledge of lipid biochemistry with many talents outside science," he says. "In an earlier life he was a concert pianist, and in his apartment in Taipei, he's played music for me while treating me to his home made sushi. Encounters like this broaden your life experience!"

More information:
<https://www.embo.org/funding-awards/young-investigators>

For Yuki Nakamura and his mentor George Coupland, mentoring through the Young Investigator Programme is very much an extension of a well-established relationship. Back in 2009, Nakamura was a postdoc in Singapore, studying how phospholipids affect plant growth and development, when he came across a paper from Coupland's lab that really sparked his interest.

Coupland, a pioneer in the use of molecular genetics to study how the life cycles of plants are synchronised to both diurnal and seasonal rhythms, was working on the Flowering Locus T (FT) gene, which is critical for controlling when plants flower, and it looked to Nakamura as though FT protein might be able to bind to his favourite phospholipids. An exchange of emails and a fellowship from the Alexander von Humboldt Foundation resulted in Coupland offering Nakamura a postdoc in his lab at the Max Planck Institute for Plant Breeding Research in Cologne, Germany, to study the problem. This led to a high-profile paper in which the pair and their colleagues demonstrated that the FT-phospholipid interaction was an exquisitely sensitive regulator of flowering time in *Arabidopsis*.

Turning personal rapport into official mentoring

Nakamura left Coupland's lab after just a year to take up a faculty position at the Academia Sinica in Taiwan, but as he says, "there were a lot of things I still wanted to learn from George, so I very much wanted to keep in close touch with him."

After Nakamura became an EMBO Young Investigator in 2015, both parties were very happy to form a mentoring relationship. "As we knew each other well already there was a personal rapport," says Coupland. "It's always inspiring to talk with young, bright and motivated colleagues, and Yuki has an irrepressible optimism and positivity that is good to be around. And he's an expert

Chris Ponting



Nuno Barbosa Morais



George Coupland



Yuki Nakamura



Five decades of funding excellence in the life sciences

Anniversary symposium marks 50 years of the European Molecular Biology Conference

Delegates, friends, partners, colleagues, and collaborators came together on 24 June 2019 for a symposium celebrating the 50th anniversary of the European Molecular Biology Conference (EMBC). The EMBC is an international and independent funding body that was set up in 1969 to provide stable finances for EMBO to carry out its activities. The event allowed participants to reflect on EMBC's specific contributions to bringing life science research onto international policy agendas, as well as exploring challenges and opportunities ahead.



More than 100 people attended the symposium, including delegates, cooperation partners and representatives of international organisations from around the world. The event took place at the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, where plans for the current EMBL/EMBO campus were drawn up in portable cabins in the 1960s.



EMBO President Gerrit van Meer explained the role of the EMBC in funding EMBO's diverse initiatives, which include fellowships, conference grants, and a science policy programme. "EMBC by itself is nothing – it facilitates EMBO in executing its general programme and that is what I am really proud of," said van Meer, who is based at Utrecht University, Netherlands.



EMBO Director Maria Leptin paid tribute to the central role the EMBC played in EMBO's success. "What makes the EMBC stand out is the openness, flexibility and constant focus on common cross-border goals," she said. Leptin thanked the EMBC on behalf of EMBO "not just for the money, but for the flexibility in their work – you see it in the enthusiasm in which EMBO staff work for our general programme, it all fits together."



Scientific talks brought three researchers to the stage to address aspects of life sciences themed on humankind's past, present and future. Johannes Krause from the Max Planck Institute for the Science of Human History in Jena, Germany, explored the genetic history of Europe. He explained how the field of archaeogenetics is reconstructing genetic data not just from people, but from fossilized microbes found on ancient bones, teeth and organs. The audience heard how the work is allowing scientists to rethink human origins and past epidemics, shedding light on prehistoric migration and adaptation events.



Matthew Larkum of the Humboldt University of Berlin, Germany, asked 'What's special about the brain?' He talked about the progress and limitations of our understanding of deep neural networks, mysteries such as how different parts of our brain work together to enable us to see objects, and exciting new developments in technologies such as optogenetics. Larkum's work explores how converging signals in our cerebral cortex contribute to conscious perception and memory consolidation.

The symposium concluded with a lively panel debate focused on understanding past and present policy, in areas such as research approach, funding, and interdisciplinary science – and how it might be improved in the future. The panel featured all plenary speakers, significant contributions from the audience, and was moderated by Michele Garfinkel, Head of the EMBO Science Policy Programme.



EMBO Member Maria Mota, Institute for Molecular Medicine in Lisbon, Portugal, outlined molecular and physiological research that explores complex networks of interactions between host and pathogens in diseases such as malaria. Mota explained that while progress has been made in past decades to tackle the disease, it has recently stalled, and malaria still infects more than 200 million people around the world each year. She outlined how current research is contributing to strategies for the therapeutic control of malaria, and how this approach could improve healthcare in the future.



Delegates of the 30 EMBC Member States attended the symposium – including representatives from Sweden, who together with Germany and Switzerland are founding members. "It is something we can be very proud of," said EMBC delegate Björn Andersson, Karolinska Institutet, Stockholm. "EMBC and EMBO have been extremely good at bringing people together across Europe, fostering exchange and strengthening molecular biology – this gave Europe a critical mass of researchers and expertise in this area, and it is a global force as a result." Another Swedish delegate, Maria Thuvesson from the Swedish Research Council, added: "EMBC and EMBO constantly identify new areas and challenges, how we can learn from each other and work together towards common goals – just one example is the work actively being done by EMBO to address research integrity and misconduct issues."



Switzerland hosted the first EMBO headquarters and also played a crucial role in the establishment of EMBC. "EMBC's impact over the past five decades is not just about money and prestige, but also achievements in science made possible by internationality, openness, and a focus on excellence," said EMBC delegate Doris Wohlfender-Bühler of the Swiss State Secretariat for Education, Research and Innovation (centre, together with the other two Swiss delegates Laurent Salzarulo, left and Anna Jazwinska Müller, right). "50 years is a huge milestone, and it is important to remind people of the terrific contributions molecular biology has made to biomedicine and many other fields. This will undoubtedly continue in the future; the excellent talks at the symposium have shown that there is still much to do and so much more EMBC and the researchers in the field of molecular biology can achieve."



Montenegro is the newest EMBC Member State, having joined the organization a year ago. "We are encouraging our research community to take advantage of opportunities that being a member of EMBC and EMBO offers, in particular fellowships and other academic exchanges," said Danilo Mrdak, EMBC delegate based at the University of Montenegro. "The collaboration is two-way: we have a lot of extraordinary young people, and if we present them with the right opportunities and resources they can produce a lot of great things." Delegate Djurdjina Bulatovic of the Ministry of Science of Montenegro added: "Internationalization and networking are crucial for us – it is very important for us to be part of institutions like EMBL, EMBO and EMBC. Scientists across Europe are dealing with many of the same issues and we are stronger if we come together to tackle them."



Guests attended a special evening event at Heidelberg Castle, and were welcomed by Heidelberg's mayor, Eckart Würzner, with speeches, dinner and a view over the beautiful Neckar valley.

The event highlighted the diversity that makes the EMBC and EMBO what they are – powerful organizations in ensuring European life science achieves its great potential now and in the future. Throughout the day, a focus on common, cross-border goals showcased the ultimate roles of EMBC and EMBO: two organizations that collaborate efficiently and effectively across borders, sharing knowledge without barriers to advance excellence in the life sciences.

EMBC's broad geography reflects the value it brings to its members. "I see the great impact of being a member of EMBC in my own country – for instance the Strategic Development Installation Grant, which is a collaborative programme that EMBO developed together with funding agencies of a number of EMBC Member States that would like to foster molecular life sciences in their countries," said Jale Şahin, Senior Programme Manager and EMBC/EMBO National Contact Point from International Cooperation Department of the Scientific and Technological Council of Turkey (TÜBİTAK). "Turkey is one beneficiary of this initiative, and TÜBİTAK makes a financial contribution to the programme. Installation grantees have access to facilities and interact with scientists that do really good work in the world. EMBC and EMBO take away borders and make a universal connection between people and countries. You realise that in order to do great science, you need to make the right choices in science policy – that is a crucial role for EMBC and EMBO."



Celebrating half a decade of the EMBC

EMBC President Gerrit van Meer and delegates Anne Paoletti (France), Peter Becker (Germany), Angela Nieto (Spain), Leszek Kaczmarek (Poland) and Claudio Sunkel (Portugal) reflect on the history and impact of the EMBC in a video marking the 50-year anniversary. https://www.youtube.com/watch?v=dJGFac1_8z0

The history of the EMBC

In *The Foundation of the European Molecular Biology Conference (EMBC), 1963-1969* Francesco Cassata, University of Genoa, Italy and Bruno J. Strasser, University of Geneva, Switzerland describe the origins of the EMBC more than 50 years ago. They look at the international landscape and the decisions that led to the formation of the EMBC. http://embc.embo.org/documents/The_Foundation_of_the_EMBC-fin-5.pdf

Continued case for high quality publishing

EMBO responds to updated Plan S guidance document

On 31 May, the coalition of funders behind 'Plan S' published an updated implementation guidance document on how to comply with the plan's Open Access (OA) principles.

EMBO was one of more than 600 organizations and individuals that provided feedback on the initial Plan S implementation guidance. In addition to expressing support for the principle of universal OA we continued to make the case for the importance of quality, selective publishing and the associated costs.

We included in our consultation response a series of points that we suggested to be clarified by cOAlition S:

- additional details on the nature of and timeframe for transformative agreements;
- explicit detail on whether publishing in hybrid journals is Plan S compliant after the transition period;
- the nature of compliance and quality control, especially the types of quality criteria and how they are going to be assessed.

The updated Plan S principles and implementation guidance include further information on all of these points, and we welcome these additions.

What has changed?

The main changes made public in May include:

- a one-year delay to the implementation date for Plan S (to 1 January 2021) and the period for transformative agreements (until 2024)
- publication in hybrid or subscription journals is compliant (but not financially supported) if either the Version of Record or the Author's Accepted Manuscript is immediately made available via a Plan S compatible OA repository
- consolidation of the technical requirements journals need to meet, including a split into mandatory and optional requirements
- recognition of the role of and challenges faced by learned societies and small- to mid-size-publishers, including a commitment to, for example, provide model contracts for transformative agreements
- further emphasis of a commitment for cOAlition S funders to adhere to the principles of the San Francisco Declaration on Research Assessment (DORA)

EMBO welcomes in particular that cOAlition S "emphasizes the need for high quality journals" and its "commitment to strong peer review systems alongside other forms of quality assurance." High-quality publishing, such as to

the standard practiced at EMBO Press and similar selective journals, requires a cost-intensive process. There remains a risk that transformative agreements may prioritize overall cost reductions that jeopardize such quality.

Considering the complexity of 'quality' as a concept, it is imperative to define clearly what constitutes high quality and its associated cost. In line with the coalition's call for transparency about journal costs, EMBO therefore plans to make public its journal finances to indicate the cost of journal quality control processes and policies.

EMBO considers quality OA publishing as one central component of Open Science. Which is why it is particularly important to ensure that quality and openness are not traded off against one another at this point.

More information:

http://embo.org/documents/news/EMBO_feedback_on_Plan_S_implementation_guidance.pdf
<https://www.embo.org/news/articles/2018/response-to-science-europe-s-open-access-plan>
<https://www.coalition-s.org/principles-and-implementation/>

Research integrity in practice

World Conference on Research Integrity focused on practical aspects

Between 2 and 5 June, The University of Hong Kong hosted the 6th World Conference on Research Integrity. EMBO has been attending and contributing to the discussions at this conference since the series started in 2007. The theme of this year's meeting was 'New challenges for research integrity' with a focus on systemic factors that influence researchers' practices—such as research assessment, incentives and rewards, competition, short-term funding—and on ways to change these to ensure the quality of research.

Towards rewarding quality over quantity

"The conference organizers put a welcome focus on the practical aspects of research integrity," says Michele Garfinkel, Head of the EMBO Science Policy Programme. She continues: "This is in line with the work EMBO is doing on bridging the gap between theoretical policy discussions and practical implementation." For example, EMBO was a co-founder of the San Francisco Declaration on Research Assessment (DORA), has analyzed alternatives to peer review in research funding, and is delivering research integrity workshops to the European life science community.

Many speakers cited DORA as an example of various efforts to improve research assessment. However, stressed plenary speaker Frank Miedema of the University of Utrecht Medical Center in the Netherlands, it is important to remember that simply signing a declaration does not directly translate into actually changing practices.

The conference on the whole called for a change toward a system that rewards quality over quantity. The meeting follow-up will include a document outlining a set of principles and examples of good practice to help institutions to improve their existing research assessment systems. It will complement other statements and manifestos, such as DORA and the Leiden Manifesto, stressing the importance of research integrity in any change to the incentives and rewards for career development.

Among the principles to improve the evaluation of research included in the draft document are to value responsible research practices in all aspects of research, such as data sharing; value reporting of all research (regardless of results); value a broad range of research activities like innovation, replication and synthesis; and consider other contributions to research such as peer review and mentoring.

Researchers' voices must be heard

One of the topics discussed was the important role funders have in establishing best practice in research assessment. However, the role of scientists themselves should not be underestimated. Plenary speaker David Moher, University of Ottawa, Canada, said that it is important for scientific leaders to also become ambassadors of responsible conduct in science by, for example, talking about and thereby raising awareness of topics such as research assessment and the ways in which it could be improved at scientific conferences.

EMBO hosted a panel discussion on the role of researchers and institutions in resolving diverse views of responsible conduct of research, chaired by Michele Garfinkel. And EMBO Director Maria Leptin used her plenary lecture 'What innovation can tell us about responsible conduct of research' to stress that it is crucial to involve scientists in discussions relating to fostering research integrity.

EMBO encourages researchers to join the next World Conference on Research Integrity in 2021 (<https://wcrif.org>). For information on EMBO's work on research integrity, contact policy@embo.org.



Interdisciplinary science and networking

EMBO Fellows get together in Heidelberg for annual meeting

57 EMBO Long-Term Fellows came together at the annual EMBO Fellows' Meeting in Heidelberg between 13 and 16 June 2019. Each year EMBO invites the postdoctoral researchers reaching the end of their EMBO Fellowship to this four-day meeting to talk about their research and meet each other.

Each of the participants gave a presentation of their research. 46 Fellows gave 15-minute overviews of their work, while 11 presented their work as a poster and in a shorter flash-talk format.

The meeting "was one of the best examples of interdisciplinarity ... when will I get the opportunity [again] to present drug targeting in the same session with a sniff response talk to detect consciousness or a *Trypanosoma brucei* full life cycle?" commented Melania Zauri, Spanish National Cancer Research Centre Madrid, Spain.

Rudra Nayan Das, Weizmann Institute of Science, Rehovot, Israel, also expressed his appreciation for hearing about scientific areas outside his own expertise on Twitter: "#EMBOFellow Anat Arzi ... gave a beautiful talk on how she is using sniff response for prognosis of level of consciousness in coma patients. Superbly articulated for non specialists in the audience like me."

The programme also included several presentations by external speakers, including former EMBO Fellow and EMBO Young Investigator Taco Kooij from Radboud University Medical Centre and former EMBO Young Investigator Tomás Marqués-Bonet from the Catalan Institution for Research and Advanced Studies in Barcelona, Spain. Both talked about their academic path and current research.

In addition to scientific talks, the participants heard about the importance of picking the

right people to work with from former EMBO Fellow and Young Investigator Patrick Meraldi from the University of Geneva, Switzerland. And Sam Krahl, EMBO Solutions Project Coordinator and Lab Leadership trainer, shared insights into science communication. Gonzalo Parra, EMBL Heidelberg described the session as an "amazing 'Science Communication' workshop at the EMBO Fellows Meeting #EMBOFellowsmtg19. We scientists have the responsibility to communicate our work to the society that pays for it with their taxes and we have to do it in the right way."

More information:

<https://www.embo.org/funding-awards/fellowships>
 Twitter: @EMBOFellows and #EMBOFellowsMtg19

A guide to strategic writing

New course for early-career researchers focuses on a proactive approach to writing scientific papers

Writing up research to present a coherent, convincing manuscript can be challenging at any career stage. It is especially daunting for PhD students, who may have little experience of writing scientifically, drawing conclusions from data, or making arguments about their discoveries and ideas.

The EMBO Press editors have developed a course to teach PhD students and postdoctoral researchers how to structure their research so that writing it up is more efficient and rewarding. By planning ahead in their experimental design, students can make life easier—for themselves and their supervisors—when it comes to putting together figures and describing discoveries. The course, 'Writing a Scientific Research Paper', is available through the EMBO Solutions training portfolio.

"We are deconstructing an article into its nuts and bolts," says Karin Dumstrei, Senior Editor at The EMBO Journal. The course offers a set of principles and tools that maximize efficiency and rigor in the preparation, analysis and communication

of experiments. "From assembling data and planning figures, to writing manuscripts, meaningful titles and abstracts, the course teaches participants to organize their thoughts and take on the process logically," explains Dumstrei.

The paper as the goal

Through theory and practical exercises, the editors help participants think of the paper as a strategic goal, rather than something to be assembled from disparate results, for example when the PhD programme comes to an end. "Writing is hard, but by thinking ahead and implementing logical steps the writing process can help you to form a precise, clear and compelling story, and identify the most interesting parts of your work," says Maria Polychronidou, Senior Editor at Molecular Systems Biology.

The course also gives insights into how journals assess papers and handle the review process. Explaining the steps helps to demystify the process and increases the likelihood of successful submission and publication.



The editors have developed the workshop to help early-career researchers understand both the complexities and opportunities of communicating their research, and the audiences for their work. "If you approach your writing with intention and develop a good structure, it can ultimately increase the quality, appeal and accessibility of your work," says Polychronidou.

EMBO Solutions provides a range of training options for scientists at different career stages. In addition to the flagship EMBO Laboratory Leadership course, the portfolio now also includes courses on project management, negotiation, and the editor-led courses on research integrity and writing scientific papers. <http://lab-management.embo.org/course-overview#sciencewriting>

Publishing alliance comes of age

Since its launch in early 2018, the team behind the new Life Science Alliance (LSA) journal has driven forward its commitment to speed, fairness and transparency, publishing more than 170 papers in the first year and a half.

LSA is a joint initiative of EMBO Press, Rockefeller University Press and Cold Spring Harbour Laboratory Press. It offers a venue for direct submissions and manuscripts transferred from partner journals. It provides space not only for conceptually novel studies, but also for resources such as datasets, new methods and important confirmatory results, descriptive or negative data.

"It saved us a year of work"

When Bart De Strooper, VIB, Leuven, Belgium, was invited to transfer his latest study on the role of inflammation in Alzheimer's disease to LSA [1], he was initially sceptical – LSA had yet to release its first issue. But where De Strooper saw unfamiliarity, his student Iryna Voytyuk saw opportunity. "It was a nice story, but the original editors felt it was not really what they wanted to focus on, so they offered us the chance to publish in LSA," says De Strooper whose group investigates basic mechanisms causing Alzheimer's and Parkinson's diseases. "I was not super enthusiastic at first, but Iryna was keen to have her work published and move on to a new position, and convinced me to give it a go."

"We know that getting rejected is associated with disappointment, but we are immediately providing an offer of how their paper might fit in LSA"

Most important for De Strooper was that the journal offered high quality editorial and peer reviews. "Right from the start, my interactions with the editors were great," he explains. "As the peer reviews on our initial submission were also transferred, we avoided having to go through the process once more – it saved us around a year's worth of additional work. Now Iryna has this great story, it's all her own work, it's published, people cite it, and she has moved onto an exciting new role. The transparency of LSA's peer review process, in particular, is a very good way of creating openness, and having the mark of quality that comes from the journal's partner organisations is very important – I think LSA has a great future."

The peer review process at LSA mirrors the rigorous standards set by its partner journals – and for each potential transfer to LSA, there are often intensive consultations between editors of both journals. "We all want to advance science and this is a terrific example of how we can create a common venue that gives new options for direct submissions, or a second chance if it did not quite work out with one of our partner journals," says Andrea Leibfried, LSA Executive Editor. "We know that getting rejected is associated with disappointment, but we are immediately providing an offer of how their paper might fit in LSA, which we hope they consider."

"We need to get the word out that LSA is a great venue that people can trust"

In the past year and a half, Leibfried has been busy building the journal's profile, addressing technical issues, and working on the ideas, questions and concerns of editors and authors. "Now the challenge is to encourage more researchers to make use of LSA, to make more offers for transfers, and to increase the proportion of authors who take up a transfer," she says. "Often researchers might be preoccupied by impact factors – we are too new to rank in traditional metrics, but through our editorial process, and dedicated professional and academic editors and an academic editorial board spanning a broad range of areas, we are publishing research of explicit value for the different fields in the life sciences. We need to get the word out that LSA is a great venue that people can trust."

Crucial to this is the personal approach taken by the journal's team. "If I had a question, Andrea immediately replied," says Sara Sigismund, University of Milan, who published a paper focussed on how endocytosis can regulate signals from a key cellular receptor [2]. "The editors guided us through their expectations,

highlighting the most relevant reviewer comments, we talked together before deciding on follow up experiments and they really improved the manuscript – in my experience it was very friendly, professional and helpful."

While Sigismund's paper was recognised as technically excellent, because it described a function in vivo that had previously been characterised in vitro, the paper was recommended for transfer to LSA. "It is very hard to find a completely novel story," says Sigismund, whose work is focussed on how cancer cells bypass the cellular safety checks meant to stop them. "Sometimes it is important to revisit mechanisms in processes that are already known, but the hardest thing is to identify good stories that are an advance in the field. Sometimes scientists are forced to render things more novel or only follow trendy directions."

Challenging this is another goal for LSA, Leibfried explains. "Our emphasis is on publishing findings that are valuable to the field," she says. "It does not mean that something needs to provide a big conceptual advance, or be hugely novel – a small step can be very important. Ultimately, we want to establish if the paper is a good fit for our audience – if the novelty factor is fairly low, we interact with the community to understand if the finding is of significant value to the field."

"The interactions with authors is what I like best," Leibfried continues. "Authors can often clarify why an issue raised during peer review is not really such a big problem, or highlight the technical challenges associated with addressing it, making the portable peer review process interactive and collaborative. LSA is a new journal, competing with so many other journals, but I am tremendously proud of our content and what we have achieved so far, and excited about where we are heading in the future."

<https://www.life-science-alliance.org/>
[1] Voytyuk I et al., Life Science Alliance (2018), Doi: 10.26508/lisa.201800026
[2] Milesi C et al., Life Science Alliance (2019), Doi: 10.26508/lisa.201800273

Manuscripts can be submitted to Life Science Alliance directly or by seamless transfer without reformatting from nine partner journals: *The EMBO Journal*, *EMBO Reports*, *Molecular Systems Biology*, *EMBO Molecular Medicine*, *Journal of Cell Biology*, *Journal of Experimental Medicine*, *Journal of General Physiology*, *Genes & Development*, and *Genome Research*.

Telling the stories of cells

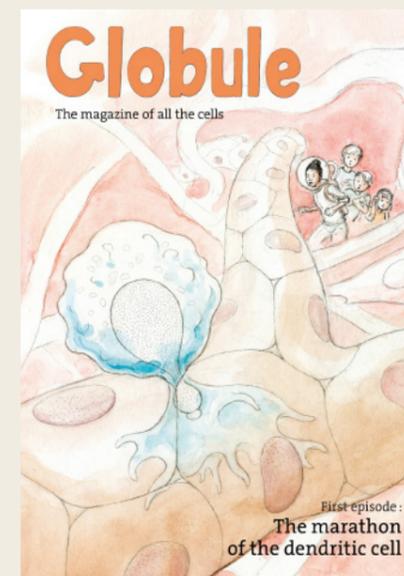
EMBO Members Ana-Maria Lennon and Matthieu Piel of the Institut Curie in Paris, France, together with artist and author Renaud Chabrier, initiated a science communication project titled 'Globule: the magazine of all cells' to tell the story of dendritic cells.

The aim of the booklet is to open up the world of science to children above 12 years of age and adults interested in learning about cellular and molecular biology. In a cartoon-based style, the booklet covers the basics of cell biology using the example of a dendritic cell. They show how these cells act, interact and function, including their role in the immune response. The story tells in a visually intuitive way how cells migrate in a crowded environment, namely the human organism, thus illustrating basic biophysical principles of cell behavior.

The successful use of artistic methods to explain modern biological research in the first 'Globule' allowed Renaud Chabrier and EMBO Member Carsten Janke to obtain a research grant to explore the place of drawing in modern science, and for Renaud Chabrier to prepare a PhD at the interface of art and science.

Further reading:

Chabrier and Janke, **The comeback of hand drawing in modern life sciences**; Doi: 10.1038/nrm.2017.126 and Garcia-Arcos et al., **Reconstitution of cell migration at a glance**; Doi: 10.1242/jcs.225565



In remembrance of Suzanne Eaton



EMBO commemorates Suzanne Eaton (1959-2019). The developmental biologist was a scientist at the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany from 1993-2001 and was elected as EMBO Member in 2006. She was one of the founding group leaders at the Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG) in Dresden, and professor at the Biotechnology Center (BIOTEC) at Technical University Dresden, Germany.

Suzanne Eaton was an acclaimed scientist, respected by the wide international community. With her bright mind and passion for research, she addressed questions in signalling, tissue mechanics and, more recently, regulation of metabolism during development and mathematical modelling in a predominantly experimental field. She was also known as a gifted athlete and an avid piano player, balancing her busy life as a scientist with her family and a rich cultural life.

Suzanne Eaton tragically died on 2 July as a consequence of a criminal act while attending a scientific meeting on the island of Crete, Greece. She is survived by her two sons and by her husband, EMBO Member Tony Hyman.

Her family, friends and fellow scientists are paying tribute to Suzanne Eaton, for example on websites by the MPI-CBG and EMBL.

With the desire of many to honour Suzanne Eaton as a scientist, mentor, and friend a fund was established in her memory. The Suzanne Eaton Fund will support young scientists to explore topics outside their core area in order to further their research. Donations to the fund are possible at <https://www.betterplace.org/en/projects/71780-suzanne-eaton-fund>.

<https://www.mpi-cbg.de/suzanne-eaton>
<https://news.embl.de/alumni/in-remembrance-of-suzanne-eaton>

EMBO working group established in Turkey

Further developing the life sciences has been an ongoing effort in Turkey. As one of the most recent activities, an EMBO working group was set up. Its goal is to create a plan to raise awareness of the EMBO Programmes and to increase the number of applications for them by Turkish life scientists. The group consists of 15 Turkish scientists, including EMBO Member Mehmet Öztürk, Izmir Biomedicine and Genome Center, and one representative from TÜBİTAK, The Scientific and Technological Research Council of Turkey.

"The group is gathering and evaluating information on the needs and requirements to improve life science research in Turkey, and passing this information to EMBO representatives and to the EMBC

Strategic Working Party," says Jale Şahin, EMBC and EMBO National Contact Point at TÜBİTAK, the main public funding body. "In the group, we are also working to recruit EMBO Fellows to Turkish research labs and increase the number of EMBO-funded scientific events in Turkey," she adds.

Turkey has been an EMBC Member since 1993. The TÜBİTAK International Relations Directory/Bilateral and Multilateral Relations Department had initiated the EMBO working group. The group met for the first time in March at the TÜBİTAK Headquarters in Ankara and has been coordinating activities across İstanbul, Ankara, Edirne, Bursa, İzmir, Antalya, Adıyaman and Van since then.

Living architectures at Paris Nuit Blanche

In a unique partnership with artists Pierre Froment and Nadir Bouassria, EMBO Member Manuel Théry and his lab brought cellular architecture to life on the facade of a central Paris building during the contemporary all-night art festival 'Nuit Blanche' in October 2018.

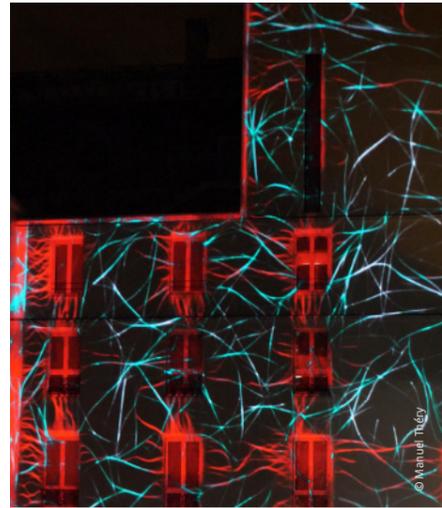
Termed 'Architectures Vivantes', or 'Living Architectures', the project engaged visitors with science, showing the beauty of self-assembling cellular cytoskeletons.

Théry's group developed a technology that allows them to constrain cells as well as purified cytoskeletal filaments to regular geometries, such as squares and other shapes. "For the Nuit Blanche we decided to move the lab to the street," explains Théry. "We wanted to turn our

squares and triangles in to a more complex structure – a building."

After having identified a building to project the cellular images onto, the researchers created a microscopic version of it, onto which they let different cell types and purified filaments grow, either by making the windows obstacles or by constraining the growth to the windows only. Using fluorescent microscopy, they created movies, which were then projected onto the original building alongside an instrumental soundtrack.

To watch the process and the resulting installation, see: <https://vimeo.com/311555342> and <https://vimeo.com/316748994>



Meeting of actin filaments (red) and microtubules (blue) growing from the windows or the walls of the building.

Interactive teaching on emerging viruses

Two years ago, EMBO Member Nolwenn Jouvenet introduced a new postgraduate course on emerging viruses at the Institut Pasteur, Paris, France. With the one-week intensive course due to run again in October this year, Jouvenet explains what she considers the goals. "We aim to transmit understanding and expertise in the diverse family of RNA viruses with a particular focus on replication, pathogenesis, mechanisms of emergence, and therapeutic approaches."

To ensure students are taught by experts, Jouvenet and her co-directors enlist scientists from the institute as well as external specialists as trainers. She adds: "In addition to lectures, we offer round tables with the speaker, debates and tutorials to encourage students to ask questions and make connections for future collaborations."

<https://www.pasteur.fr/en/emerging-viruses>



Celebrating women in science in Japan

On 23 June 2019, six EMBO Members participated in an international symposium for female researchers working on chromatin biology in Kobe, Japan. The event to celebrate and support female scientists from Japan and Europe took place one day before the joint annual meeting of the Japan Society for Cell Biology and Protein Science Society Japan.

The speakers included EMBO Members Geneviève Almouzni (Institut Curie, Paris, France), Ana Pombo (Max Delbrück Center for Molecular Medicine, Berlin, Germany), Daniela Rhodes (Nanyang Technological University, Singapore), Maria Elena Torres-Padilla (Helmholtz Zentrum München, Germany) and co-organizer Susan Gasser, (Friedrich Miescher Institute

for Biomedical Research, Basel, Switzerland). Among the seven female scientists from Japan presenting their work was newly elected EMBO Member Noriko Osumi from Tohoku University.

The half-day scientific symposium was followed by an afternoon of activities based on the content of the EMBO Lab Leadership course for 70 participants. "I became interested in organizing this event after I learned that Japanese group leaders setting up their independent labs do not receive leadership training," explains Gasser. She continues: "I felt that to support the promotion of female scientists in Japan, it was important to raise awareness of topics such as unconscious bias and gender-balanced leadership."



Taking science to the streets of Lisbon

Scientists at the João Lobo Antunes Instituto de Medicina Molecular (iMM) in Lisbon, Portugal work in areas relevant to human health, including oncology and infectious and neurodegenerative diseases. They are interested in understanding the mechanisms that lead to disease and laying the foundation for better diagnosis tools and new treatments.

"Since these themes are relevant to society, it is of outmost importance to make the research developed at iMM more perceptible and increase the involvement of people with science", explains EMBO Member and iMM President Maria do Carmo-Fonseca. With this in mind, the institute developed a public awareness campaign

with the motto 'There is no great question without a great answer'.

Focus of the campaign were questions that iMM scientists pursue: Why is there no vaccine against malaria?; How does breast cancer appear?; What does chocolate do to our brains? The questions were placed on billboards in the streets and Metro stations around Lisbon.

EMBO Member and iMM Executive Director Maria Mota explains: "Unleashing curiosity about science and the questions we are working on were the starting point for connecting citizens with science. Each poster also had a specific QR code linking the questions and visuals on the posters to short videos with our scientists."

Artistic science communication at Heidelberg University

EMBO Young Investigator Annika Guse has established an artistic science communication workshop for bachelor and master's students at Heidelberg University, Germany. Interested in ways to encourage and teach students about the communication of science to wider audiences, Guse developed the concept together with her sister, Stephanie Guse, a Vienna-based artist.

The goal is to teach students a method called 'Thinking Hands' to enable them to visualize complex scientific topics without specialized terminology. "Focusing on simple, arts-based

communication as a team promotes discussion among the students," explains Guse, "which enables them to focus on the core message they wish to convey." These messages are then turned into paintings and collages.

Participants in the most recent workshop worked to visualize genetic engineering: What do we fear? How does it work? And how can we use it? The resulting collection of pieces in booklet form offers students a tool to discuss this controversial topic with others in their everyday lives.



Elisa Izaurralde Memorial Symposium

On 30 April 2019, the Max Planck Institute (MPI) for Developmental Biology in Tübingen, Germany, hosted a Memorial Symposium for RNA biologist and EMBO Member Elisa Izaurralde, who unexpectedly passed away on that date a year earlier. Izaurralde joined the institute as director in 2005. Organized by EMBO Member Ralf Sommer and Maria Götz, the symposium celebrated her life and scientific achievements.

The speakers were EMBO Members Witek Filipowicz and Susan Gasser from the Friedrich Miescher Institute, Basel, Switzerland; Elena Conti, MPI for Biochemistry, Munich, Germany; Reinhard Lühmann, MPI for Biophysical Chemistry, Göttingen, Germany; Matthias Hentze, EMBL, Heidelberg, Germany; and Ramesh Pillai, University of Geneva, Switzerland. Each of them had crossed paths with Elisa Izaurralde at a different stage of her career and presented some of their latest findings that built on or related to Izaurralde's work. And through sharing personal anecdotes they honoured Izaurralde's personal impact.

The MPI plans to establish an annual 'Elisa Izaurralde Memorial Lecture' with the goal to highlight exceptional future contributions to the field and commemorate and honour Izaurralde's scientific legacy.

Collaborative research on DNA repair and genome stability in Germany

On 1 January 2019, the German Research Foundation (DFG) established a new collaborative research centre on 'Regulation of DNA repair & genome stability'. This interdisciplinary network brings together experts in structural biology, organic and biochemistry, cell and molecular biology, and genetic toxicology from Mainz, Darmstadt, Munich and Frankfurt, including EMBO Members Ivan Dikic, Peter Hopfner, Christof Niehrs and Helle Ulrich.

The primary aim of the consortium is to investigate and understand intrinsic and environmental sources of genome instability, their biological effects and the defense mechanisms that protect cells against genotoxic stress. The participating researchers will characterise the regulatory mechanisms and interdependencies of DNA repair systems. This research will provide insight

into how the different repair and genome maintenance pathways manage to maintain a balance between cell death and survival, genome stability and plasticity, and gene regulation.

Helle Ulrich of the Institute of Molecular Biology, Mainz, Germany and the centre's spokesperson says: "The German Research Foundation is giving us the chance to establish a new research hub in this important area of biomedicine in Germany. Promotion of both innovative research projects and the structures that support them has provided us with the opportunity to exploit synergies and catch up with the world's leading centres in this field."

www.sfb1361.de

Good Read – Publications from the EMBO community

A cancer associated somatic mutation in LC3B attenuates its binding to E1-like ATG7 protein and subsequent lipidation
Adi Kimchi and colleagues
Autophagy | 8 October 2018
Doi: 10.1080/15548627

Peer power: A women's peer-mentoring program at the workplace: example from the academia
Uri Alon and colleagues
EMBO Reports | 5 November 2018
Doi: 10.15252/embr.201847246

Single-cell reconstruction of the human early maternal-fetal interface
Sarah Teichmann and colleagues
Nature | 14 November 2018
Doi: 10.1038/s41586-018-0698-6

Structural variation in the gut microbiome associates with host health
Eran Segal and colleagues
Nature | 27 March 2019
Doi: 10.1038/s41586-019-1065-y

Evolthon: A community endeavor to evolve lab evolution
Yitzhak Pilpel, Roy Kishony and colleagues
PLoS Biology | 29 March 2019
Doi: 10.1371/journal.pbio.3000182

Helical Twist and Rotational Forces in the Mitotic Spindle
Iva Tolić and colleagues
Biomolecules | 1 April 2019
Doi: 10.3390/biom9040132

Bromodomain inhibition of the coactivators CBP/EP300 facilitate cellular reprogramming
Tamer T. Önder and colleagues
Nature Chemical Biology | 8 April 2019
Doi: 10.1038/s41589-019-0264-z

Rigid helical-like assemblies from a self-aggregating tripeptide
Ehud Gazit and colleagues
Nat. Materials | 15 April 2019
Doi: 10.1038/s41563-019-0343-2

Direct Induction of the Three Pre-implantation Blastocyst Cell Types from Fibroblasts
Yossi Buganim and colleagues
Cell Stem Cell | 24 April 2019
Doi: 10.1016/j.stem.2019.03.018

Histone H1.5 binds over splice sites in chromatin and regulates alternative splicing
Gil Ast and colleagues
Nucleic Acids Research | 11 May 2019
Doi: 10.1093/nar/gkz338

Awards of Excellence

EMBO MEMBERS

Santiago Ramón y Cajal National Award

Ángela Nieto, Institute of Neurosciences, Alicante, Spain, received the Santiago Ramón y Cajal National Award in biology. The award is made by the Spanish Ministry of Science, Innovation and Universities. Nieto receives the honour for her pioneering research on epithelial-mesenchymal transition and its role in furthering understanding of the origins of cancer and degenerative diseases.

Israel Prize for Life Sciences

Adi Kimchi, Weizmann Institute of Science, Rehovot, Israel, won this year's Israel Prize for Life Sciences, the country's highest honour. She receives the prize for her work on deciphering the mechanisms of programmed cell death in mammals, including the identification of DAP genes.

GlaxoSmithKline Prize

The Biochemical Society awarded the 2020 GlaxoSmithKline Prize to Sarah Teichmann from the Wellcome Sanger Institute, Cambridge, UK. The award recognizes research in biochemistry carried out in the UK or the Republic of Ireland that led to new advances in medical science. Teichmann receives 2000 pounds sterling prize money.

Centenary Award

Kay Davies, University of Oxford, UK, received the Biochemical Society Centenary Award 2020, which is awarded annually to a biochemist of distinction from any part of the world. Davies was honoured for her work on developing therapeutic strategies for Duchenne muscular dystrophy. She will receive 3000 pounds sterling prize money and the Centenary medal.

Rumford Prize

Gero Miesenböck, University of Oxford, UK, and Georg Nagel, Würzburg University, Germany, are among the recipients of the American Academy of Arts & Sciences Rumford Prize. They share the prize with Ernst Bamberg, Ed Boyden, Karl Deisseroth, and Peter Hegemann in recognition of their contributions to the invention and refinement of optogenetics.

Alice and CC Wang Award in Molecular Parasitology

Dominique Soldati-Favre, University of Geneva, Switzerland, received the American Society for Biochemistry and Molecular Biology's 2019 Alice and C.C. Wang Award in Molecular Parasitology for her outstanding work on *Toxoplasma gondii* invasion and egress. She received the award at the annual ASBMB meeting in Orlando, USA in April this year.

EMBO INSTALLATION GRANTEEES

Young Scientist Award

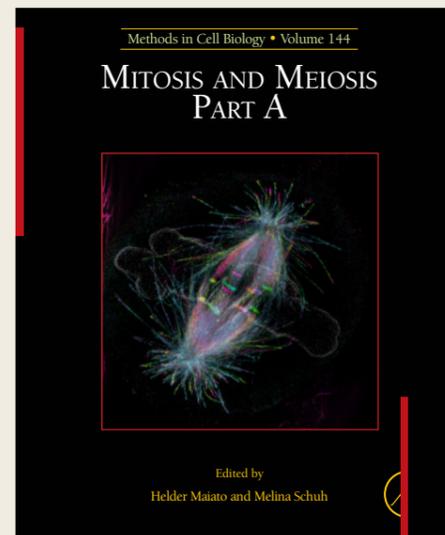
Ogun Adebali, Sabancı University; Şükrü Anıl Doğan, Boğaziçi University; Serap Erkek, Izmir Biomedicine and Genome Center; and Ayşe Koca Caydasi, Koc University (all in Turkey) were awarded the Science Academy of Turkey Young Scientist Award. The award is given to scientists under the age of 40 with a record of excellence in research.

SMBE Allan Wilson Junior Award for Independent Research

The Society for Molecular Biology and Evolution (SMBE) awarded the Allan Wilson Junior Award for Independent Research to **Claudia Bank** of the Instituto Gulbenkian de Ciência (IGC), Oeiras, Portugal. The award recognizes her innovative original research to advance the field of molecular biology and evolution. She receives a prize of 2000 US dollars.

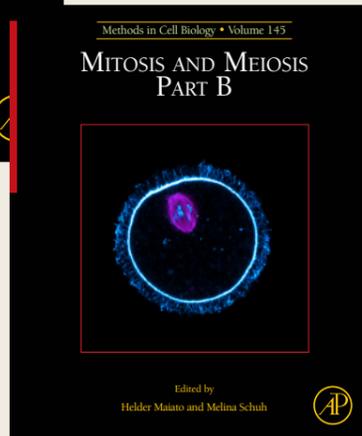
BOOK REVIEW

20 years on: the latest in mitosis and meiosis



Mitosis and Meiosis Part A, Volume 144
Helder Maiato and Melina Schuh
Elsevier | May 2018
www.elsevier.com/books/mitosis-and-meiosis-part-a/maiato/978-0-12-814144-1
ISBN: 9780128141441

Mitosis and Meiosis Part B, Volume 145
Helder Maiato and Melina Schuh
Elsevier | May 2018
<https://www.elsevier.com/books/mitosis-and-meiosis-part-b/maiato/978-0-12-814142-7>
ISBN: 9780128141427



EMBO Members Helder Maiato, University of Porto, Portugal, and Melina Schuh, Max Planck Institute for Biophysical Chemistry, Goettingen, Germany, have edited two new volumes of the 'Methods in Cell Biology' series.

Written for cell biologists in the broadest sense by numerous experts in the field, the books provide an extensive overview of the latest developments and techniques used to study mitosis and meiosis. Almost 20 years after the original publication of a *Methods in Cell Biology* series volume dedicated to this subject, these two books provide a comprehensive update.

Mitosis and Meiosis, Part A, Volume 144 includes chapters on analyzing the spindle assembly checkpoint, employing CRISPR/Cas9 genome engineering to dissect the molecular requirements

for mitosis, small-molecule tools in mitosis research, and controlling mitosis using optogenetics. *Mitosis and Meiosis Part B, Volume 145* focuses on microscopic approaches, such as mitotic live cell imaging at different time scales, the characterization of mitotic spindle by multi-mode correlative microscopy, and imaging-based assays for mitotic chromosome condensation and dynamics.

Practical Courses

UK-London | 2–12 September 2019 | H.R. Saibil
Image processing for cryo electron microscopy

DE-Heidelberg | 8–17 September 2019 | A. Diz-Muñoz
Current methods in cell biology

DE-Heidelberg | 15–22 September 2019 | V. de Lorenzo
Synthetic biology in action: Bridging natural/non-natural

FR-Lyon | 16–20 September 2019 | R. Salek
Metabolomics bioinformatics in human health

FR-Grenoble | 23–27 September 2019 | F. Gabel
Small angle neutron and X-ray scattering from biomacromolecules in solution

DE-Heidelberg | 3–8 November 2019 | R. Strippecke
Humanized mice in biomedicine: Challenges and innovations

DE-Hamburg | 3–9 November 2019 | J. Kosinski
Practical integrative structural biology

ES-Barcelona | 10–15 November 2019 | E. Sabidó
Targeted proteomics: Experimental design and data analysis

DE-Heidelberg | 11–15 November 2019 | D. Ordóñez
The fundamentals of high-end cell sorting

DE-Heidelberg | 17–22 November 2019 | V. Benes
Methods for analysis of circular RNAs: No tautology

IN-Bangalore | 1–6 December 2019 | S. Gosavi
Computational analysis of protein-protein interactions in cell function and disease

IN-Kolkata | 19–30 January 2020 | R. Natesh
CEM3DIP 2020: Single particle cryoEM of macromolecular-assemblies and cellular tomography

DE-Heidelberg | 1–6 March 2020 | M.D. Vivanco
Techniques for mammary gland research

DE-Heidelberg | 15–20 March 2020 | E. Zielonka
FISHing for RNAs: Classical to single molecule approaches

LU-Luxembourg | 16–23 March 2020 | P. Wilmes
Integrated multi-omic analyses of microbial communities

DE-Heidelberg | 20–27 April 2020 | J.E. González-Pastor
Microbial metagenomics: A 360° approach

DE-Heidelberg | 3–9 May 2020 | J. Medenbach
Measuring translational dynamics by ribosome profiling

TR-Izmir | 10–15 May 2020 | A. Bonvin
Integrative modelling of biomolecular interactions

GR-Heraklion | 10–21 May 2020 | A. Stamatakis
Computational molecular evolution

DE-Heidelberg | 16–26 June 2020 | P. Ronchi
Advanced electron microscopy for cell biology

DE-Dresden | 22 June–1 July 2020 | A. Honigsmann
Methods for studying lipids in cell biology

DE-Heidelberg | 19–24 July 2020 | H. Sapers
Molecular geobiology

Workshops

UK-Oxford | 1–5 September 2019 | P. Klenerman
CD1-MR1: Beyond MHC restricted lymphocytes

ES-Sant Feliu de Guíxols | 1–6 September 2019 | K. Jung
Bacterial networks (BacNet19)

IT-Ischia | 1–6 September 2019 | A. Roux
The physics and chemistry of endocytosis at multiple scales

DE-Heidelberg | 4–7 September 2019 | F. Gebauer Hernández
Protein synthesis and translational control

IT-Naples | 10–13 September 2019 | C. Neri
Network inference in biology and disease

AT-Vienna | 10–13 September 2019 | J.M. Peters
Organization of bacterial and eukaryotic genomes by SMC complexes

HR-Cavtat | 13–17 September 2019 | C. Joazeiro
The ubiquitin system: Biology, mechanisms and roles in disease

IT-Assisi | 16–18 September 2019 | M.T. Pallotta
Molecular mechanisms of unconventional protein secretion in eukaryotic cells

CH-Les Diablerets | 16–20 September 2019 | F. Cortés Le-desma
DNA topology and topoisomerases in genome dynamics

DE-Berlin | 17–20 September 2019 | G.R. Lewin
Beyond the standard: Non-model vertebrates in biomedicine

DE-Heidelberg | 22–25 September 2019 | J.L. Faulon
Creating is understanding: Synthetic biology masters complexity

Editorial

Coordinating editor
Annika Grandison

Text Annika Grandison, Adam Gristwood, Tilmann Kiessling, Katrin Weigmann, Kathy Weston, Rosemary Wilson

Print & web layout
Pauline Marchetti

DE-Dresden | 27–30 September 2019 | K. Simons
Lipid function in health and disease

SI-Ljubljana | 29 September–2 October 2019 | J. Ule
RNP network dynamics in development and disease

GR-Crete | 6–9 October 2019 | M. Pasparakis
Cell death in immunity and inflammation

GR-Crete | 6–10 October 2019 | J. Tyler
Histone chaperones: Structure, function and role in development and disease

DE-Hamburg | 7–9 October 2019 | C. Löw
Tools for structural biology of membrane proteins

GR-Attica | 7–11 October 2019 | M. Tarsounas
The DNA-damage response in cell physiology and disease

ES-Girona | 14–19 October 2019 | K.H. Wolfe
Comparative genomics of eukaryotic microbes: Genomes in flux, and flux between genomes

DE-Berlin | 26–29 October 2019 | T.F. Meyer
The impact of bacterial infections on human cancer

DE-Heidelberg | 13–16 November 2019 | L. Steinmetz
Precision health: Molecular basis, technology and digital health

PT-Ericeira | 15–19 November 2019 | C. Adrain
Proteostasis: From organelles to organisms

IN-Bangalore | 8–13 December 2019 | H. Atreya
Intrinsically disordered proteins: From molecules to systems

IL-Rehovot | 8–10 March 2020 | M. Fainzilber
Cell size and growth regulation

ES-Barcelona | 1–3 April 2020 | M. Graupera
Vascular malformations: From fundamental biology to therapeutic opportunities

FR-Gouvieux | 5–10 April 2020 | F. Relaix
Muscle formation, maintenance, regeneration and pathology

DE-Heidelberg | 22–24 April 2020 | D. O'Carroll
The epitranscriptome

DE-Heidelberg | 6–9 May 2020 | S. Garel
Microglia 2020

IL-Ein Gedi | 10–15 May 2020 | A. Zariwsky
Bacterial cell biophysics: DNA replication, growth, division, size and shape

SE-Svartsjö | 17–21 May 2020 | M. Minczuk
Molecular biology of mitochondrial gene maintenance and expression

NL-Leiden | 24–28 May 2020 | H. van Attikum
Chromatin dynamics and nuclear organization in genome maintenance

Symposia

EMBO | EMBL Symposia

DE-Heidelberg | 11–13 September 2019 | J. Zaugg
Multomics to mechanisms: Challenges in data integration

DE-Heidelberg | 29 September–2 October 2019 | B. Lehner
Systems genetics: From genomes to complex traits

DE-Heidelberg | 9–12 October 2019 | J. Ellenberg
Seeing is believing: Imaging the molecular processes of life

India | EMBO Symposia

IN-Kalyani | 9–12 November 2019 | S. Mukherjee
Human microbiome: Resistance and disease

IN-Bangalore | 26–29 January 2020 | G. Hasan
Calcium signaling: Molecular mechanisms to role in health and diseases

Lecture Courses

EMBO | FEBS Lecture Course

GR-Spetses Island | 4–12 September 2019 | P. Cossart
The new microbiology

GR-Hydra | 15–22 September 2019 | A. Smith
The hydra XIV European summer school on stem cell biology and regenerative medicine

ME-Herceg Novi | 24–28 September 2019 | A. Trifunovic
Mitochondria in life, death and disease

Global Exchange Lecture Course

CL-Santiago | 14–20 October 2019 | D. Svergun
Structural and biophysical methods for biological macromolecules in solution

For a complete and up-to-date list of EMBO events please go to events.embo.org

Next issue

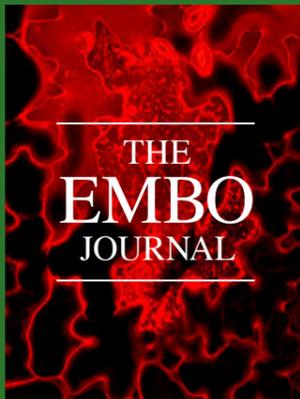
The next issue of *EMBO Encounters* will be dispatched in **November 2019**. Please send your suggestions, contributions and news to communications@embo.org by **20 September 2019**.

UPCOMING DEADLINES

Long-Term Fellowships throughout the year

Women in Science Award 15 October 2019

India | EMBO Symposia 15 February 2020



Resisting worm attacks

Plants cannot run when being attacked. They do, however, have a chemical defense mechanisms to cope with stress and deter predators. Jasmonate, for example, is a defense hormone produced in the leaves in response to extensive damage by crushing or herbivore feeding. Just like most stress signals in plants, jasmonate production is mediated by a wave of calcium increase, reactive oxygen species (ROS) production, and depolarization.

Marhavý *et al.* investigated the effects of a very different type of injury: single-cell wounding in roots that could result from attacks by small insects, nematodes, or microbes. The researchers induced wounds by laser ablation to investigate the plant's response in isolation, rather than the complex interplay between host and

invader. They found that laser ablation, like other forms of wounding, induces an increase in calcium levels, ROS production, and depolarization. However, in this case the mechanism leads to ethylene instead of jasmonate production.

The researchers around EMBO Member Niko Geldner also found that nematode attacks induce a similar response, and that ethylene production is required to antagonize nematode invasion, demonstrating the biological relevance of their observation.

Single-cell damage elicits regional, nematode-restricting ethylene responses in roots
Peter Marhavý *et al.*
Read the paper: emboj.embo.org/content/early/2019/05/06/emboj.2018100972

EMBO Molecular Medicine

EMBO reports



molecular systems biology

Progerin stresses the ER

Hutchinson-Gilford progeria syndrome (HGPS) is a rare genetic disease with features of premature aging. One of the main symptoms is accelerated atherosclerosis, leading to premature death at about 15 years of age. HGPS is caused by progerin, a mutant lamin A variant that alters many cellular functions.

To shed light on the molecular mechanism behind HGPS, Hamczyk *et al.* recently developed the first mouse model of the disease. They found that atherosclerosis can be recapitulated by specifically expressing progerin in vascular smooth muscle cells (VSMCs), demonstrating a key role of these cells in disease progression.

In the present study, the researchers used transcriptomic analysis to unravel the pathways underlying progerin-induced atherosclerosis, focusing on early stages of disease progression to identify primary changes that cause the disease. They uncovered that endoplasmic reticulum (ER) stress and the associated unfolded protein response trigger VSMC cell death and atherosclerosis. The work points to the possibility of targeting the ER stress response with a chemical chaperone to ameliorate atherosclerosis and associated cardiovascular events in children with HGPS.

Progerin accelerates atherosclerosis by inducing endoplasmic reticulum stress in vascular smooth muscle cells
Magda R. Hamczyk *et al.*
Read the paper: <http://embomolmed.embo.org/content/11/4/e9736>

Turning off JAK-STAT signals

When cells in the body detect an invading virus, they mount an antiviral immune response involving Janus kinases (JAKs) and Signal Transducer and Activator of Transcription proteins (STATs) – the JAK-STAT pathway. The JAK-STAT signal is tightly regulated; it needs to be strong enough to ensure protection, but if it gets too strong it may cause inflammation and autoimmunity. Fang *et al.* have uncovered a negative regulator of the pathway, cTAZ, that plays a role in fine-tuning cellular antiviral response.

cTAZ is a truncated version of TAZ, an effector of the Hippo signaling pathway known for its role in early development, tissue regeneration and tumorigenesis. Although cTAZ is borrowed from the Hippo pathway, it has little to do with it. It is transcribed from an alternative promoter such that it retains C-terminal sequences of TAZ but lacks important parts required for Hippo signal transduction.

Thus, as cTAZ does not participate in the Hippo pathway, it can function as a specialized regulator for the JAK-STAT signaling pathway during antiviral response, without affecting growth and proliferation.

An alternatively transcribed TAZ variant negatively regulates JAK-STAT signaling
Chuantao Fang *et al.*
Read the paper: <http://emboj.embo.org/content/early/2019/04/11/emboj.201847227>

Independent paths to Alzheimer's

Advanced age is one of the most profound risk factors for Alzheimer's disease. However, people age differently and molecular indicators of age do not strictly correlate with chronological age. To better analyze how ageing interacts with other risk factors, Glorioso *et al.* developed a tool to universally measure molecular brain age.

In a first set of experiments, the researchers used four different cohorts to determine how the transcriptome of the brain changes with age. Using these data, the researchers detected a close correlation between molecular brain ageing rate and Alzheimer's disease in a separate cohort of older subjects.

Numerous genome wide association studies have identified APOEε4 as the most consistent genetic risk factor for late onset Alzheimer's disease. Glorioso *et al.* now determined that rapid ageing rate and APOEε4 are synergistic risk factors; slow ageing rates strongly protected against developing disease even in presence of the disease-associated APOEε4 allele. They suggest that Alzheimer's disease can be induced by these two factors independently and that interventions against either one might protect against the disease.

Rate of brain aging and APOEε4 are synergistic risk factors for Alzheimer's disease
Christin A. Glorioso *et al.*
Read the paper: <https://www.life-science-alliance.org/content/2/3/e201900303.abstract>

The pros and cons of deposit formation

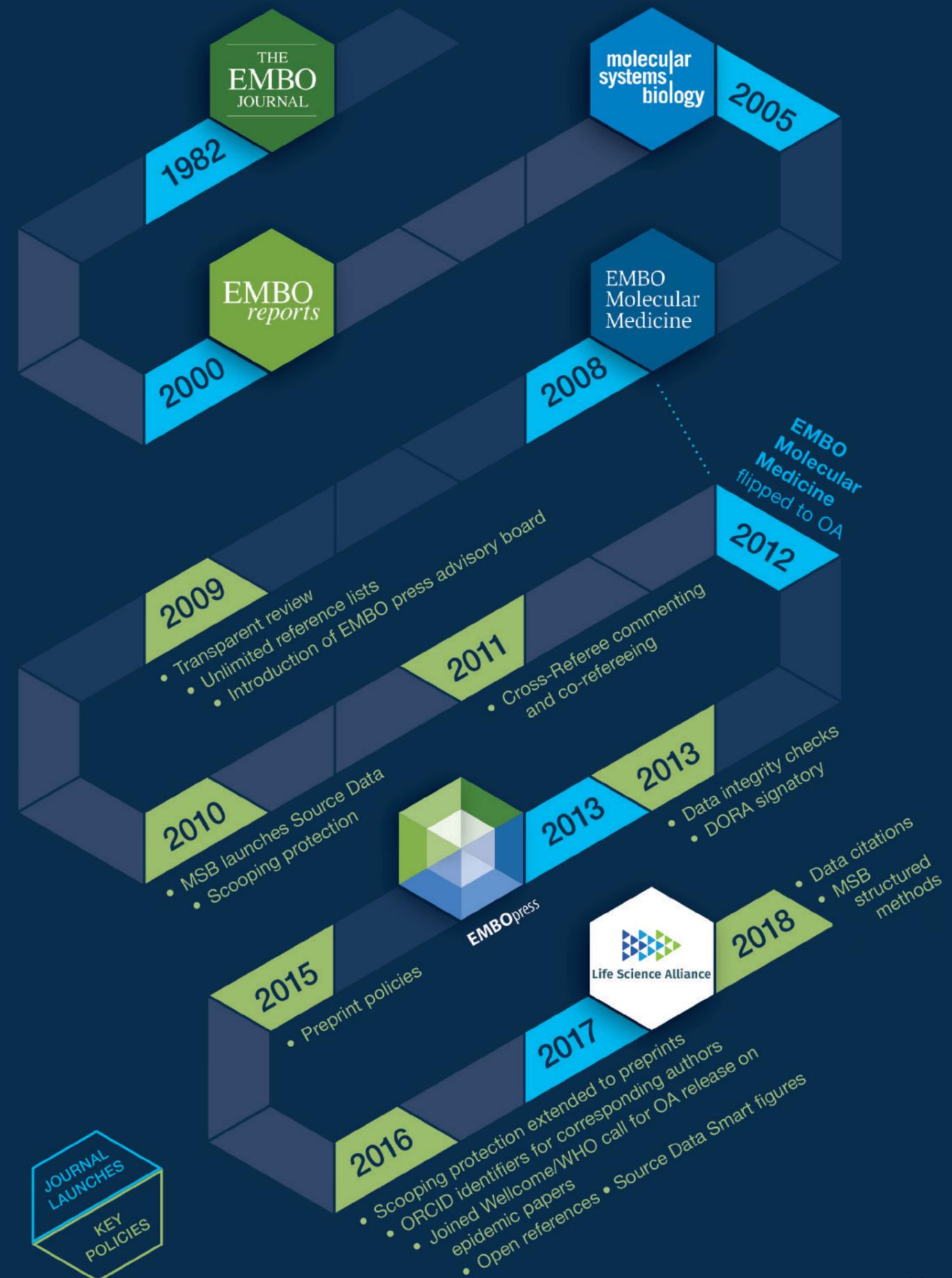
The formation of insoluble protein deposits is characteristic for numerous disorders such as Alzheimer's disease or Parkinson. However, not all protein deposits are necessarily detrimental, as they may also serve important biological functions such as forming membrane-less compartments.

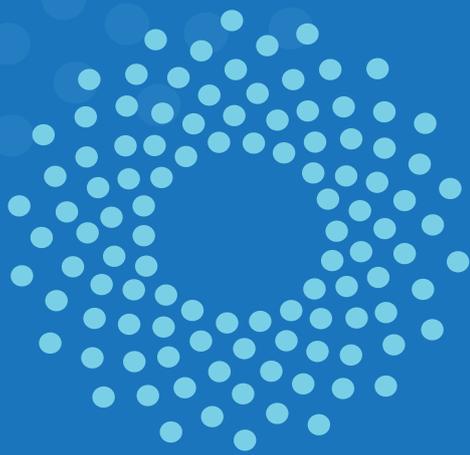
Sanchez de Groot *et al.* developed an approach to investigate how deposit formation impacts on cell fitness. To this end, the researchers around EMBO Member M. Madan Babu created two yeast strains, one of which contained a polypeptide whose biochemical activity can be essential, non-essential, or toxic – depending on environmental conditions. In the other strain, the same polypeptide was fused to a sequence that promotes the formation of insoluble deposits. By comparing the growth rate of the strains, the researchers could quantify the effect of deposit formation under different conditions. In the future, this modular architecture can be adapted to assess the contribution of different types of deposit-forming sequences on cell fitness.

Moreover, the researchers observed that even within an isogenic population, the extent of deposit formation varied between individual cells. Such phenotypic diversity could enhance the likelihood of survival of some individuals from a population after an environment alteration.

The fitness cost and benefit of phase-separated protein deposits
Natalia Sanchez de Groot *et al.*
Read the paper: <http://msb.embo.org/content/15/4/e8075>

EMBOpress MILESTONES AND INNOVATIONS IN PUBLISHING





ASCB | EMBO 2019 meeting

Washington DC • December 7-11

A forum across the life sciences

Topics will range from cell biology as a fundamental basis of biology to non-traditional model organisms and the use of computational modelling and biophysics to “build the cell from the ground up”.

Submit an abstract by:

3 September
for a poster

3 October
early registration
deadline

Programme co-chairs

Elly Tanaka

Institute for Molecular Biology, Vienna/Austria, for EMBO

Sue Jaspersen

Stowers Institute for Medical Research, Kansas City/US, for ASCB

www.ascb.org/2019ascbembo/