

ISSUE 41 EMBO *encounters*

Connecting scientists worldwide
EMBO launches Global
Investigator Network

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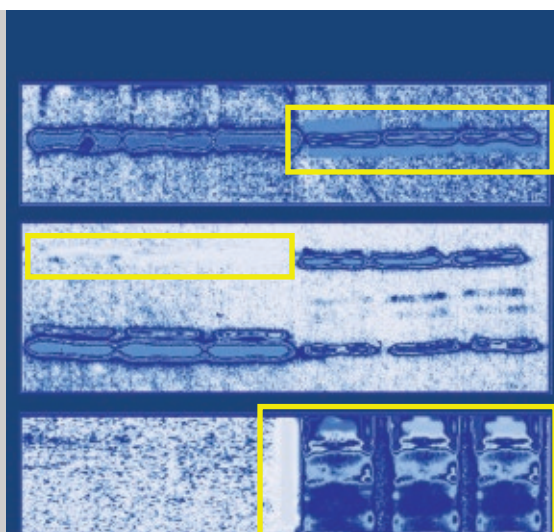
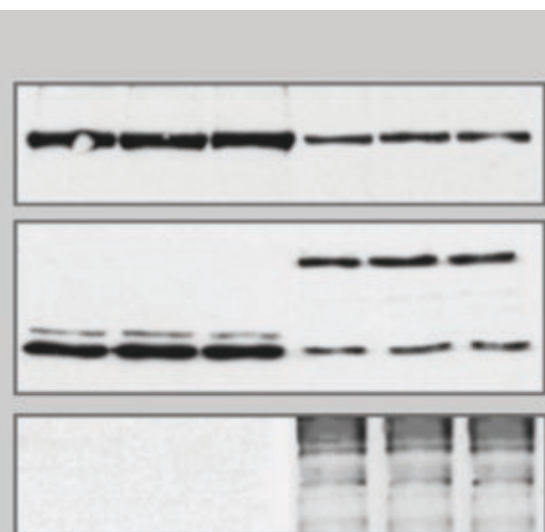
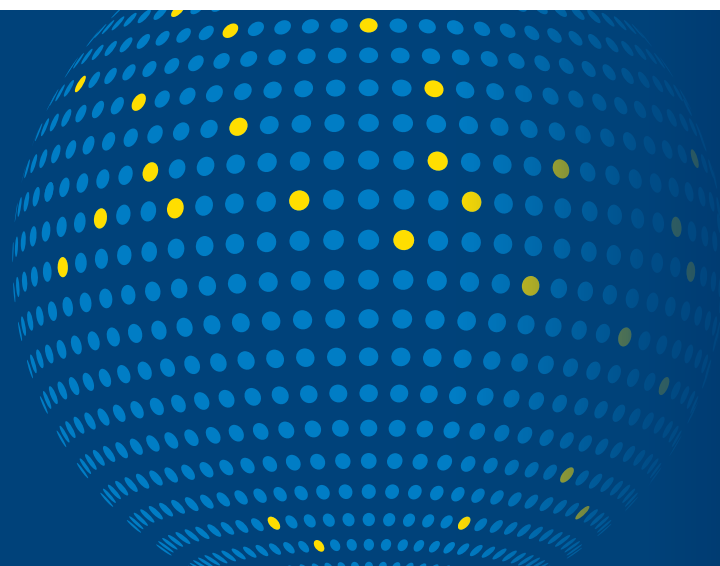


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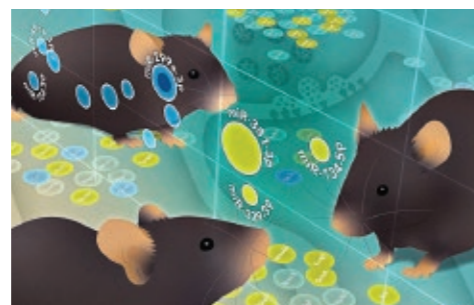
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Editorial

The concept of Open Access (OA) is simple: making scholarly publications freely accessible to anyone. At EMBO, we support the idea of openness. We publish three OA journals and offer OA options in our other two publications, and we work on policy and practical solutions, such as SourceData, to make open science a reality.

OA publishing has been around for nearly two decades. However recent developments like 'Plan S' mean that we are putting renewed focus on it. What do such changes mean for the life science community? How do they affect our journals? And what can we do to support the creation of a suitable open publishing system?

As part of this work, we asked scientists in the EMBO Membership and Young Investigator network to share their thoughts on OA publishing and 'Plan S'. Their feedback helped to shape our response to the 'Plan S' consultation initiated by the coalition of funders behind the initiative (see p 8).

Our community's comments on the concerns, considerations and needs of life scientists also informed the work we carried out in a recent policy workshop we held in Heidelberg. Together with representatives from research and publishing we analyzed potential routes to Open Science in light of recent developments.

We will keep you informed on further developments at EMBO. And we continue to be interested to hear what the research community thinks about these recent developments. So do get in touch with us.

Maria Leptin
Director, EMBO

EMBO launches Global Investigator Network

New programme connects young research group leaders across the world

Young life scientists who have started their laboratories in Chile, India, Singapore or Taiwan can now apply to join the newly founded EMBO Global Investigator Network. The programme provides the selected researchers with funding and platforms for networking with other life scientists in these regions and in Europe, encouraging the establishment of cooperation across international borders.

"The EMBO Global Investigator Network will support the career development of the next generation of scientific leaders in Chile, India, Singapore and Taiwan."

Other benefits include: funds for visiting laboratories in Europe to give scientific seminars or to plan or continue a collaboration, for training in research leadership and management skills, for inviting other EMBO Global Investigators, EMBO Members or current EMBO Young Investigators to give scientific lectures at the programme members' institutes, and for attending or organising regional or international scientific meetings (see box).

"The EMBO Global Investigator Network will support the career development of the next generation of scientific leaders in Chile, India, Singapore and Taiwan by providing them with opportunities to interact and collaborate with leading scientists from their regions and the rest of the world," says EMBO Member and the programme's Committee Chair Noel Lowndes, National University of Ireland, Galway.

"The opportunity of joint activities with EMBO Young Investigators will greatly facilitate the establishment of valuable contacts between EMBO Global Investigators and their colleagues in Europe, and will enable the creation of a shared network between young researchers in Europe and EMBO's partner countries," he adds.

Applicants to the Global Investigator Network must have been independent research group leaders for between one and six years on 1 January in the year they apply to the programme. They must also be working in an EMBC Associate Member State (currently India and Singapore) or in a country or territory covered by a cooperation agreement with EMBC (currently Chile and Taiwan). An EMBO Committee selects the Global Investigators based on their scientific excellence.

"The opportunity of joint activities with EMBO Young Investigators will greatly facilitate the establishment of valuable contacts."

The 2019 application round closes on 1 June 2019.

Programme details and application information: embo.org/funding-awards/global-investigators

Global Investigator Network benefits

Scientists elected to become an EMBO Global Investigator will receive a range of financial and networking support. This includes funds to:

- visit labs in Europe to present a seminar or establish a collaboration
- develop management and leadership skills through EMBO Lab Leadership Courses
- invite EMBO Global Investigators, Members or Young Investigators to give a lecture at programme members' institutes
- organise joint group meetings with other laboratories
- attend or organize regional or international scientific meetings
- attend the biennial EMBO Global Investigator Network meeting
- organize a lab retreat
- cover publication fees in EMBO Press journals

“I really love working in the lab”

Sara Linse is the recipient of the FEBS | EMBO Women in Science Award 2019

By Rosemary Wilson



Sara Linse of Lund University, Sweden, is the recipient of the 2019 FEBS | EMBO Women in Science Award. She receives the award for her contribution to the understanding of the molecular mechanisms of protein self-assembly in Alzheimer's disease and related neurodegenerative disorders. In addition, the award recognizes her varied activities in support of science and society.

The award recognizes outstanding achievements of female researchers in the life sciences. In addition, the recipients are role models who inspire future generations of scientists.

EMBO Member Chris Dobson, University of Cambridge, UK, describes Sara Linse as “an astonishing role model who inspires other women to pursue careers in science and illustrates how it is possible to have a family life, support those with special needs, play vital roles in promoting scientific excellence, as well as carrying out original research of the highest quality.”

Linse is known as a generous colleague and collaborator who shares ideas, results and samples freely and enthusiastically. She also serves the scientific community through her work on numerous committees, which includes chairing the Nobel Prize Committee for Chemistry. She has authored eight children's books and founded two organizations committed to supporting children and young adults with autism and mental illness.

How did you become a scientist?

My parents are botanists, so I was exposed to science from an early age. We all went into the fields to help collect plants and seeds. I don't think I've known how to be anything else!

I was about 13 when I first came across proteins. Our teacher told us how they are made of chains of 20 different building blocks which determine how they fold and what structure and function they have. “But”, our teacher said, “no one really understands why.” I thought: “that can't be so difficult; I'm going to solve that!”

You began working on molecular interactions in neurodegenerative diseases relatively recently. Why did you change fields?

I needed a change. After 20 years I felt I could take any protein, clone it, express it, understand its folding and ligand binding. It's not a challenge. Then I came across the biological risks of nanoparticles. Since I had no idea how to study this, I thought it would be fun to do!

The plan was to study how nano-particles adsorb proteins from body fluids, and how this affects the proteins' structure, function and aggregation. Naively, I thought we could just download the protocols and do the experiments. But there was no consensus, so we developed the protocols ourselves.

We then realized we could use our approach to study protein aggregation per se, such as for the amyloid beta peptide involved in Alzheimer's disease. Everyone told me not to touch amyloid beta since it is renowned to be difficult to study. They told me it is the ‘peptide from hell’; I'd never succeed. The more they said it, the more I wanted to do it!

What did your studies on amyloid beta reveal?

With our collaborators we were finally able to show that the process that had long been known to include nucleation and growth, contained a second nucleation step. The amyloid fibrils form, and the monomers then nucleate on the surface. It turns out that this second step is the main nucleation event, and gives rise to most of the toxicity to neurons. We are also able to inhibit the secondary nucleation and toxicity. I think that is one of the major findings in my scientific career, and, I believe, a major development in the field.

How important is collaboration in your research?

For me it's essential. I am a problem driven scientist. I cannot know all the theory and methods I need, so it is very important to have a group of scientific collaborators and colleagues to discuss with. Many brains are better than one.

It is critical to be in an environment with open-minded scientists where both students and seniors can freely discuss their science.

How do you inspire your students?

To ask a question, design the experiment and find the answer yourself – there is so much satisfaction in that. I really love working in the lab, and I think the pleasure I feel when doing science is visible to those around me!

It is also important to show that science requires persistence, a lot of dedicated work and clear identification of governing factors. One of my colleagues and I have pooled our students so that we can more easily help each other, and the students get daily exposure to a wider range of projects. This has been fantastic, and I hope it will continue.

You have also written several children's books. How did that come about?

I have always been interested in writing fiction, as has my partner, so we started to write together. Our books are about a little dragon and his friends. It's a lot about being different and asking questions and being brave enough to take your own path. In each story there is also a scientific question, which the dragons discuss.

We do it because it is fun, but also because we think we can give children something to think about. In science everything has to be backed up with data and references; in fiction you can write whatever you want! It's a lovely contrast.

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

Nominations for the 2020 award will be accepted until 15 October 2019.

Ten Installation Grants awarded

EMBO support for group leaders in the Czech Republic, Poland, Portugal and Turkey

At the end of 2018, EMBO welcomed ten early-career researchers establishing their independent laboratories in the Czech Republic, Poland, Portugal and Turkey to the EMBO community. EMBO Director Maria Leptin said: “These talented life scientists have all shown that they are able to carry out research of the highest quality, and we look forward to supporting them in taking the next step in their careers and setting up their own research groups.”

“For some countries in Europe, retaining or attracting the best researchers can be a challenge,” explains Leptin. “Through the Installation Grants scheme, we encourage young researchers

to return or move to countries that find it difficult to compete with large well-funded research centers in some of the other European countries. We hope to improve the participating countries' competitiveness in European science.”

Each of the ten Installation Grantees will receive 50,000 euros annually for between three and five years. The grants are funded primarily by the Czech Republic, Estonia, Poland, Portugal and Turkey, the participating Member States of the European Molecular Biology Conference (EMBC), EMBO's intergovernmental funding body.* In addition to financial support, the recipients receive networking opportunities and

practical support by becoming part of the EMBO Young Investigator network.

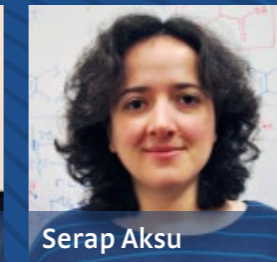
embo.org/funding-awards/installation-grants

* The funding agencies supporting the 2018 award are: Czech Republic: Ministry of Education, Youth and Sports; Estonia: Estonian Research Agency; Poland: Ministry of Science and Higher Education; Portugal: Fundação para a Ciência e Tecnologia; Turkey: Scientific and Technological Research Council of Turkey (TÜBİTAK).



Ogun Adebali

G protein-coupled receptor evolution and genetic diseases
Istanbul, TR



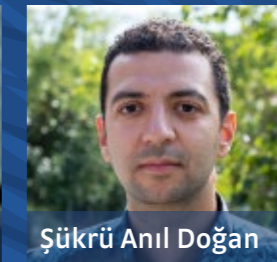
Serap Aksu

Immune cell signalling in situ and in real time
Istanbul, TR



Claudia Bank

Fitness landscapes and the predictability of evolution
Oeiras, PT



Şükrü Anıl Doğan

ROS-mediated control of tissue-specific mitochondrial biogenesis
Istanbul, TR



Serap Erkek

Epigenetic regulation of bladder cancer
Izmir, TR



Anna Karnkowska

Evolution of phototrophy in eukaryotes
Warsaw, PL



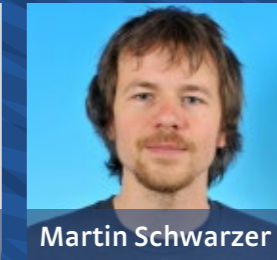
Serkan Kır

Signalling pathways driving energy wasting
Istanbul, TR



Lukasz Piatkowski

Hydration in cell membrane organization
Poznan, PL



Martin Schwarzer

Bacteria-driven host juvenile growth promotion
Prague, CZ



Michal Szymanski

DNA repair in human mitochondria
Gdansk, PL

Young Investigator network meets in Singapore

Each year, members of the Young Investigator network for a scientific and networking meeting. The EMBO Young Investigator Meeting is a central component of the support for the young group leaders that are part of the network. This year, 56 former and current Young Investigators and Installation Grantees came together at the Agency for Science, Technology and Research (A*STAR) Matrix building on the Biopolis campus in Singapore.

Between 13 and 15 March, the meeting participants presented and discussed their research. The scientific programme was complemented by a variety of informal sessions, such as speed networking or a stroll along Singapore's Marina Bay.

Vaishnavi Ananthanarayanan from the Indian Institute of Science in Bangalore, India was

elected as EMBO Young Investigator in 2018. She said that her first Young Investigator Meeting “was an excellent annual meeting [and I] met several fellow Young Investigators who do great science all over the world.”

Third Singaporean Gold Medal symposium

The Young Investigator Meeting was preceded by a one-day symposium to celebrate the connections between EMBO and Singapore, which became an EMBC Associate Member State in 2016. The EMBO Gold Medallists and Young Investigators Meeting 2019 was the third Gold Medal symposium held in Singapore after similar meetings in 2009 and 2015. EMBO Member Phil Ingham from Nanyang Technological University, Lee Kong Chian School of Medicine in Singapore

initiated this meeting ten years ago. Together with EMBO Young Investigator Bruno Reversade of the Institute of Medical Biology, A*STAR, Singapore, he acted as local organizer for this year's meeting.

EMBO Gold Medal recipients Dario Alessi, Jiří Friml, Amanda Fisher and Marek Basler, as well as eight Young Investigators presented their work at the symposium, which was open to the entire Singaporean life science research community. In addition, Thomas Lemberger talked about Open Science and Maria Leptin announced the launch of the EMBO Global Investigator Network (see p 3).

<http://events.embo.org/19-goldmedal/>

The life of an EMBO Fellow

New lab, new country, new challenges: Recipients of an EMBO Long-Term Fellowship are required to move to a different country for their postdoctoral research. Three EMBO Fellows told Kathy Weston how this influenced their life scientifically and personally.

When deciding where to apply for a postdoc, Inês Castro was looking not just for a great lab, but for a PI who would be a good role model for a young female scientist. Two and a half years into her postdoc with EMBO Member Maya Schuldiner at the Weizmann Institute in Rehovot, Israel, she is happy that she found just that: “Maya is an amazing mentor,” says Castro. “Right now, she’s helping me think strategically about the next steps – which conferences I need to attend, who I should establish collaborations with. But she also knows that you are a person with a life outside science, and that it’s important to make that work.”



Inês Castro

Finding the right lab

Castro, who is Portuguese, moved to Exeter, UK, to do a PhD, and towards the end of her studentship got interested in how organelles function and communicate with each other. She decided to attend a conference to scope out suitable PIs for a postdoc.

to her colleagues, which resulted in him securing a position in a neighbouring lab.

Israel wasn’t somewhere Castro had ever thought of going, but the opportunity was too good to miss. “Science should be one of the areas where we try to put aside politics,” she says. The Weizmann takes good care of its foreign workers, arranging accommodation close to the lab for the first year, and making sure that accompanying partners and children are looked after, too.

Aside from the Mediterranean climate, which Castro relishes, and the occasions where she’s had to resort to Google Translate to converse with the locals, one of the biggest changes has been adapting to the Israeli working week: “It takes a lot of time for your brain to shift to the week starting on a Sunday,” she says, “and it takes even more time for your family to realise that if they call you on a Sunday, you’re working!”

must mediate these and many other fundamental brain-body interactions is the aim of Roman Romanov and his colleagues in Tibor Harkany’s group at the Medical University of Vienna, Austria. In 2017, Romanov’s paper on the subject



Roman Romanov

“Overwhelmingly positive”

Castro applied for an EMBO Long-Term Fellowship shortly after she arrived in the lab, and was very impressed with the process. “The application form itself isn’t hugely long, which was good, but the main thing was that the Fellowship office is very nice,” she says. “It’s very easy to talk to them, and if you have a problem they answer very quickly.” She also liked the rolling deadline as “you can schedule writing the application to fit your timing.”

All in all, moving country has been an overwhelmingly positive experience, says Castro. “It’s not easy, especially in the beginning, but what I’ve taken from it has really compensated that. Moving abroad means you can’t go home for the weekend – you have to find a way to fix it for yourself. It’s made me much more of a grown-up!”

helped him to successfully apply for an EMBO Advanced Fellowship. Only five of these coveted awards are made each year, offering EMBO Long-Term Fellows two further years’ support.

On the move with family

Romanov’s path to Vienna began in Russia, where he completed a PhD at the Institute of Biophysics in Pushchino, south of Moscow, before moving to the Karolinska Institute in Stockholm, Sweden, for a first postdoc. He moved to Harkany’s lab in 2015, excited by the possibilities it offered for pushing the boundaries of brain research.

It was a hard decision to leave Russia, Romanov says, partly because the country was entering a period of relatively generous funding for science, but mostly because he and his wife had two small children. They since added to their family with a daughter, born in Sweden, and a son born after their arrival in Austria.

“When we left Russia, I promised my family I’d spend the weekends with them as much as possible, and we still keep to that rule.”

“My wife had never been abroad,” says Romanov, “so it was a big step, especially with two children.” It is essential to think practically about how you’ll cope, he adds. “You can’t just go to work all the time! When we left Russia, I promised my family I’d spend the weekends with them as much as possible, and we still keep to that rule.”

Vinoy Vijayan is no stranger to crossing continents. As the son of a diplomat working for the Indian government, his present home, Leuven, Belgium, represents the seventh country he has lived in. Moving so frequently has made him quite adaptable, Vijayan thinks, although he did underestimate how different Belgium would be to the USA, where he did his PhD. “Everyone seems to speak good English, so there’s no language barrier,” he says, “but, culturally, the people are far more reserved. It took me a while to settle in.”

Vijayan is a postdoc in EMBO Member Patrik Verstreken’s lab at the Vlaams Instituut voor Biotechnologie (VIB), an institute affiliated to the University of Leuven that works at the interface between academia and industry – something that Vijayan finds appealing. “There’s a dynamism here that means everyone is encouraged to really push their science and make it not only as good as possible, but more outward looking.”

“Even in a place where you don’t think things are going to be dramatically different, you still learn a lot.”

Expanding horizons

Having done a PhD in *Drosophila* neurobiology, Vijayan wanted to continue in the field, but was keen to find somewhere with a more applied approach. He bumped into Verstreken at

Mastering life in a new country

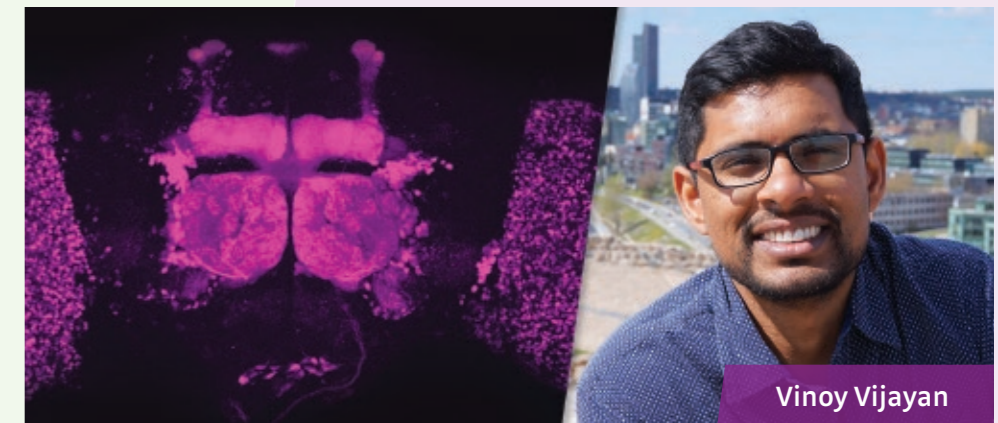
The university helped a lot with the move from Sweden to Austria, Romanov says, searching for suitable schools and kindergartens for the children, and also helping to secure rental of a house. However, Romanov’s oldest daughter has ADHD, and the family struggled with the Austrian education system, although she is now in a special education centre where she is doing well.

“For one or two years I was worried that we’d made a big mistake,” Romanov says, “but you don’t always know what’s going to work out best for your children. Despite all that’s happened, my oldest daughter tells me she prefers Austria to Sweden, and the rest of the family are very happy here, too.”

Adapting the local approach

Both the EMBO Long-Term and Advanced Fellowships, with their child and childcare allowances, have been more than enough for the family’s needs, and additionally, Romanov says that holding such prestigious awards has been helpful in making a case to the university that he should be permitted to progress to an independent position.

He says he also got a lot out of the EMBO Fellows’ Meetings, where he met other scientists at the same stage of their careers. “We have a very different research structure in Russia, so aside from the science, I’ve used the meetings to learn how people approach problems, and how to succeed in European science.”



Vinoy Vijayan

a conference, and realised after a long chat over lunch that they were a good match scientifically. “I wish I could say that it was a well thought-out move,” says Vijayan, “but it just felt right, so when Patrik offered me a place in his lab I said yes immediately!”

Moving country shouldn’t be a prerequisite, Vijayan thinks, but it’s a good way of exposing yourself to new ideas. “Even in a place where you don’t think things are going to be dramatically different, you still learn a lot, both personally, and scientifically.”

Vijayan is using *Drosophila* as a model organism to study the role of autophagy in Parkinson’s disease. It is an exciting project that has really expanded his thinking about how science should be done, he says. “I was very much a single-minded, focussed lab rat when I came here. But now I think about how to do things a little differently, what my project might bring to other people’s work, and how my work fits into the wider scientific world.”

A boost of confidence

Being awarded an EMBO postdoctoral fellowship was an important step. “It wasn’t something I ever thought I’d get, and it did so much for my confidence when I found out I’d been successful,” says Vijayan. The application process and after-care have been exemplary: “As scientists we want to be left to do our science and worry as little as possible about administration and paperwork,” he says, “and EMBO is very good at making that possible.”

Does Vijayan have advice for future applicants? “Get as much feedback as you can on your proposal, and not just the science side of it”, he recommends. “People underestimate how important it is to take time to write well. If you lose someone in the second paragraph, it doesn’t matter how great your science is four paragraphs down. You have to grab your reviewer’s interest at the beginning!”

The future of Open Access

EMBO provided feedback on the Plan S consultation

In September 2018 a group of European funders, supported by the European Commission, announced their plan to accelerate a move to full and immediate Open Access in scholarly publishing. Referred to as 'Plan S', the initiative mandates that scientists receiving money from a participating funder must publish their work in journals or on platforms that offer immediate Open Access.

EMBO responded to this announcement, stressing the importance of not sacrificing quality publishing by equating 'open' to 'for free'. We also called on the coalition to ensure that any cap for Article Processing Charges is not below the cost for assessment and

processing per accepted article at quality journals. Otherwise there is a risk that openness and quality will need to be traded off against one another.

Commenting on the guidance document

The coalition of funders behind Plan S (referred to as cOAlition S), published a document providing more detailed guidance on the implementation of Plan S in November 2018. At the same time, the group called for feedback on this document.

Taking into consideration the input provided by EMBO Members and Young Investigators, we submitted a response to the consultation.

More than 600 responses were submitted in total. The results are currently being analyzed and will be made public by cOAlition S.

EMBO responded to the two questions posed by cOAlition S, which focused on clarity of the guidance document and additional mechanisms or requirements funders should consider. We also highlighted three additional areas of concern regarding the implementation of Plan S: selectivity and cost caps, the irreversible nature of a switch to Open Access, and the importance of community values.

EMBO has made its response available online at: embo.org/documents/news/EMBO_feedback_on_Plan_S_implementation_guidance.pdf

Families welcome

EMBO introduces childcare grants at all courses and workshops

For scientists who are also parents, attending conferences or training courses can mean no less than a logistical masterpiece. One that is only made more difficult when both parents work in academia, perhaps even in the same field. To support parents wishing to attend one of its more than 90 scientific meetings, EMBO introduced new childcare grants this year.

Since January 2019, the organizers of all EMBO Courses and Workshops receive up to 1,000 euros for childcare grants. Participants are able to apply for a grant during their regular meeting application, and the selection is handled directly by the organizers. The grants can be used in different ways to meet the personal needs of each applicant. For example, they can be used to cover the costs of a babysitter or a childcare facility. But it is also possible to use the funds to pay for the travel costs of a caregiver or the costs of bringing children to a meeting.

"The EMBO childcare support was instrumental in allowing us to hire a babysitter or to subsidize daycare."

Flexible support

EMBO has already been offering similar support to members of the EMBO Young Investigator Network. Edgar Gomes of the University of Lisbon, Portugal, and his wife are both group leaders and work in similar areas. He says that "the EMBO childcare support was instrumental in allowing us to hire a babysitter to stay with our two boys or to subsidize daycare at a meeting site" when they were both attending the same meeting.

Nicola Iovino, a group leader at the Max Planck Institute of Immunobiology and Epigenetics, Freiburg, Germany, and father of three children adds that the flexibility of the childcare grant enabled him to not only reduce the burden on his wife when he travelled, but also to bond with his children.

"The grant allowed me to take my son along to a meeting. At the same time my mum travelled to meet us, so that she could look after him during the day and we could spend the evening together," he says. "I often feel bad about missing out on time at home when I travel. I loved having a chance to show my son what I do when I go away and also spending some time with just him."

"I loved having my son with me – having a chance to show him what I do when I go away."

Inspiration for wider support

Paola Picotti at ETH Zurich, Switzerland, also has two young sons. She used the childcare grant when she was an invited speaker at a conference that fell during the school holidays and at a time when her husband had meetings he could not cancel. "In Switzerland babysitters and nannies are very expensive, so the EMBO childcare support was very much appreciated," she says.

Picotti adds that the opportunity to use such flexible support also inspired her to establish something similar for the people in her lab. "I set up my own childcare support system," she says, "with which I financially support lab members in need of emergency childcare." She finances this from her core budget at the moment, but is hoping to secure external funding for her initiative in order to continue supporting the parents she works with.

The data detective

Before a paper is accepted for publication in an EMBO Press journal, all images are checked for discrepancies, mistakes and aberrations. Data integrity analyst Erica Wilfong Boxheimer describes the process and why EMBO Press invests in this additional step.

Why does EMBO Press check images?

The aim is to keep the scientific record accurate, and we offer image checking as a service to authors, giving them the chance to address aberrations before publication. If we notice anything that could point to serious data manipulation, we also alert the authors' institute, so that appropriate steps to resolve the matter can be taken.

At the same time the process supports EMBO activities on responsible conduct of research. If we spot discrepancies in figures we can help scientists to understand what constitutes bad practices and support principal investigators in training their lab.

How does the figure checking process fit into the editorial workflow?

Currently we only check figures in papers that have been peer-reviewed and invited for revision. These papers are checked manually when the revised manuscript is submitted. Across our five journals we receive almost 3,000 submissions per year, so without automation it is unfortunately not scalable to check all papers at initial submission.

What are the things you look for?

We are looking for things like changes in patterns or a discontinuity in the background of images. Sometimes these are easy to see with the naked eye. Other times, for example when the background is black, they aren't visible without image adjustments.

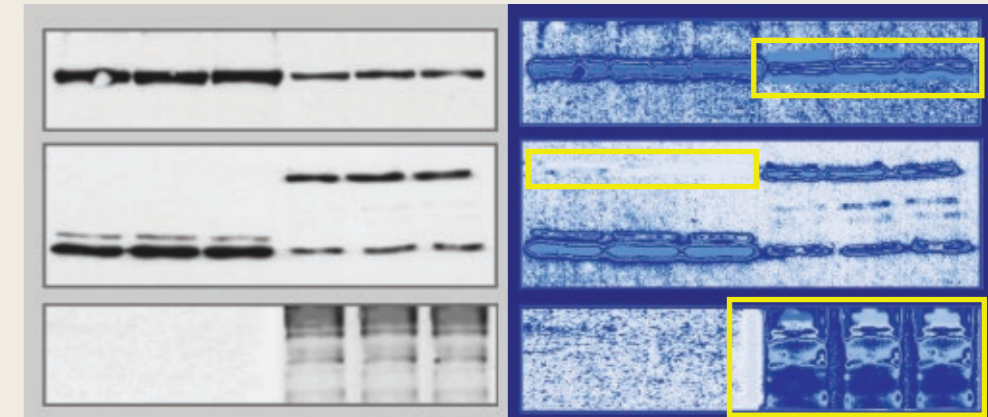
Do you use particular software for screening?

The typical process is to compare each figure to the other figures in the paper looking for duplications. We check for duplications manually, and use Photoshop tools and filters to adjust images to look for aberrations. By enhancing the background or increasing the contrast we can more easily identify discontinuities in the background or at the edges of pasted objects. We apply a standard set of filter adjustments that can reveal traces of editing to each image.

What do you do once you identify a problem with an image?

We class manipulations into three groups. Level 1 cases are cosmetic aberrations that can be resolved after looking at supporting source data – in this case we usually allow figure revision.

Level 2 cases involve data 'beautification' and undeclared image manipulation. Depending on the case we may allow revision or report details to the institute or university.



An example of serious image manipulation. Applying filters (right) to a Western blot reveals the removal of artefacts (top), erasure of bands (middle), and the splicing and manipulation of individual bands (bottom).

Level 3 is the most serious and involves image manipulation without explanation and without compelling source data. In this case we report the case to the authors' institute for investigation and we don't pursue publication of the manuscript as we will have lost confidence in the integrity of the body of work.

What sort of discrepancies do you notice most frequently?

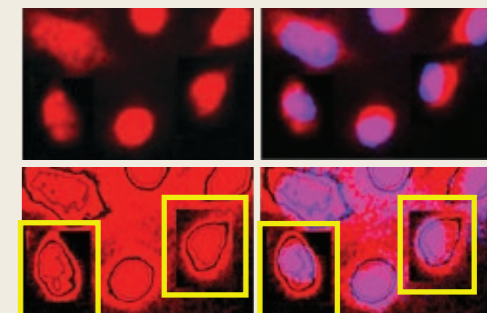
The two things we find most often are duplications and splice sites, for example in Western blots. With many duplications we find that authors for example did not indicate that they are re-using the same control as part of the same experiment, but sometimes authors also re-use control across independent experiments.

In the case of splicing, for example to remove lanes from a blot, my impression is that this is often done because the authors feel that it makes figures look nicer – it's something we call 'beautification'. Nonetheless, we need to flag it up, as it could be seen to misrepresent the data unless the splice is marked properly.

More serious manipulations are the dropping in of single bands into a blot or additional cells into a micrograph. Patches like these occur much less frequently, but are particularly important for us, as they cannot usually be explained by sloppiness or haste in preparing the figures.

How do authors respond when you inform them of your findings?

Of course it depends on the person, but most authors are grateful that we found figure issues before publication and scrutiny in the public domain.



An example of beautification. Contrast adjustments (bottom) reveal that two cells were added to the micrograph.

Often the corresponding author is surprised that we found issues. But this also gives them as lab leader a chance to improve processes in the lab and between collaborators.

How does EMBO Press handle more serious issues of image manipulation?

Sometimes we have to contact the authors' institutions to encourage them to launch a formal investigation. Unlike us, the institute can view lab notebooks and talk to the scientists involved to try to recreate what happened. In rare cases we have had to do this, too, but it is basically impossible to judge the cause of problems accurately and fairly from a distance.

The authors usually cooperate with us. And we explain that it is in the authors' best interest to sort out any problems before publication, as these investigations are – potentially – less damaging to their career if the issues are sorted in advance of publication instead of having to deal with corrections or even retractions.

Facts & Figures

An overview of EMBO activities in 2018

Through its programmes and activities, EMBO supports researchers at all career stages, stimulates the exchange of scientific information, and helps to build a research environment where scientists can achieve their best work.

The organization's Facts & Figures report, which is published each year, summarises the work carried out in all of these areas to promote, foster and recognize excellence in the life sciences. These pages illustrate some of the highlights of EMBO's activities throughout 2018.

26 new Young Investigators

- 442 group leaders joined the Young Investigator Programme since its launch
- 10 Installation Grantees selected to join the network States

The Young Investigator Programme identifies and supports some of the best young group leaders in the life sciences. Installation Grants support young group leaders in six EMBC Member States participating in the programme.

1 science policy workshop organised

- 37 policy meetings attended by EMBO staff
- 4 workshops on research integrity at institutes in EMBC Member States

The Science Policy Programme provides informed analyses to policymakers, administrators and scientists in the areas of research integrity, scientific publishing and biotechnology and genomic technologies.

46 EMBO training courses

- 3 new course types introduced
- 8 countries in which training was delivered

Training for life scientists worldwide on topics including leadership, self-leadership and negotiation were delivered by the EMBO daughter company Gesellschaft zur Förderung der Lebenswissenschaften Heidelberg GmbH.

62 new members

- 26 countries in which new members reside
- 1800+ scientists make up the EMBO Membership

New members are nominated and elected by the membership annually. Election is recognition of research excellence in the life sciences.

97 courses and workshops

- 11,000+ attendees at these scientific meetings
- 43 keynote lectures delivered by EMBO Members

Through the Courses & Workshops Programme, EMBO supports and encourages the sharing of scientific knowledge and skills.

4 global cooperation agreements in place

- 7 lecture series in India by EMBO members
- 3 EMBO | India Symposia in partnership with India Alliance

EMBO Global Activities help to establish long-lasting cooperation worldwide through scientific exchange and support for researchers.

8 committees and boards

- 15 members on Council
- 74 members on boards and committees

EMBO Council is the organization's governing body and is responsible for ensuring organizational development. Through serving on boards and committees, EMBO Members deliver and guide the organization's activities.

190 Long-Term Fellows

- 5 Advanced Fellows
- 337 Short-Term Fellowships

EMBO Long-Term Fellowships fund postdoctoral research for up to two years; Advanced Fellowships offer an additional two years of funding. Short-Term Fellowships fund research exchanges of up to three months.

5 scientific journals

- 1.4 million article downloads across EMBO Press
- Integration of SourceData into the EMBO Press production workflow

EMBO Press publishes *The EMBO Journal*, *EMBO Reports*, *EMBO Molecular Medicine*, *Molecular Systems Biology*, and – in partnership with Rockefeller University Press and Cold Spring Harbor Laboratory Press – *Life Science Alliance*. EMBO Press also aims to shape best practice in scientific publishing.

2 awards

- EMBO Gold Medal for Marek Basler and Melina Schuh
- FEBS | EMBO Women in Science Award for Frauke Melchior

The EMBO Gold Medal is awarded to young scientists for exceptional contributions to the life sciences in Europe. The FEBS | EMBO Women in Science Award recognizes outstanding achievements of female life scientists.

30 EMBC Member States

- 21 million euros budget for EMBO Programmes
- 70 EMBC delegates and advisers

The EMBC is the intergovernmental body that funds EMBO. Each EMBC Member State typically appoints one delegate from a government ministry and one scientific adviser. In 2019, the EMBC will celebrate its 50th anniversary.



Partnering for open data

SourceData and BioStudies bring open data sharing to EMBO Press

SourceData from EMBO is an open platform that makes the data published as figures in research papers directly searchable. SourceData describes the contents of figures from scientific articles in a standardized, machine-readable format, allowing articles to be searched and interlinked using their data content. In collaboration with BioStudies from EMBL-EBI, a database that aggregates the data files linked to a specific publication or project, SourceData now offers an integrated workflow to make published data openly accessible and easy to find.

The pilot implementation of this new publication workflow was announced at the ASCB | EMBO Meeting on 9 December 2018. Starting at the beginning of 2019, *The EMBO Journal*, *EMBO Reports*, *Molecular Systems Biology* and *EMBO Molecular Medicine*, published by EMBO Press, process all accepted manuscripts through SourceData and make their raw data files downloadable via the BioStudies repository.

Supporting future research

Announcing the new process, SourceData project lead, Thomas Lemberger, explained “Scientists can support future research by making their published data FAIR data (see box). SourceData provides one of the most complete implementations of the FAIR principles to date. By curating figures and their underlying data, SourceData provides authors with a service that makes their data searchable, interconnected, accessible and downloadable as an integral part of journal publication.”

The management and hosting of the SourceData files is enabled by an automated route for passing files and their descriptive meta-data from SourceData to BioStudies. Jo McEntyre, Literature Services Team Leader at EMBL-EBI described the advantages this brings: “BioStudies collates all the data from a study into a unified record, linking to key community data resources, storing related data files, and linking to publications, making the data easier to cite and find. The pipeline from SourceData provides a route for authors to deposit their data, cite it in their papers and benefit from a searchable, catalogued data archive. We are delighted to collaborate with SourceData on this leading integration with publishing workflows and we hope to see more of this kind of arrangement with other journals in the future.”

Commitment to accuracy and transparency

Describing the first live implementation of SourceData in their publishing workflow, Head of Scientific Publishing at EMBO, Bernd Pulverer, expressed how working with SourceData is core to the EMBO Press commitment to data integrity and transparency: “We enthusiastically promote FAIR, accurate and open data, with policies that encourage the sharing of reusable data files in high-quality peer-reviewed studies. This pilot project with SourceData makes us the first publisher to offer a fully integrated data curation and deposition pipeline – a practice that we would like to see become an Open Science publishing standard.”

Following this pilot, SourceData aims to partner with other organisations to make this integrated data-discovery platform available more widely for publishers and other scientific institutions to benefit from its organized system of hosted, findable data.

FAIR data

FAIR data describes a set of principles designed to guide data management in scientific research. The goal is to make efficient, reliable and cost-effective use of data. FAIR stands for the set of properties to which data management should aspire:

Findable
Accessible
Interoperable
Reusable

See: Wilkinson, M. D. et al. The FAIR Guiding Principles for scientific data management and stewardship. *Sci. Data* 3: 160018 (2016); doi: 10.1038/sdata.2016.18

More information:

<https://sourcedata.embo.org>
<https://www.ebi.ac.uk/biostudies>
<http://www.embo.org>

Getting creative

Participants of the EMBO ‘Creative Problem Solving’ course explain how they put their training into action



Creativity is essential in research. The capacity to think in new ways and combine seemingly unrelated ideas requires skill, talent and a good deal of practice. To encourage and help scientists to use creative problem-solving tools and processes, EMBO has added a ‘Creative Problem Solving for Scientists’ course for group leaders and senior postdocs to its training portfolio (see box)

Several scientists in the EMBO community already took part in the course. Here they describe how they approach and sustain creativity in their labs.

Ideas from unexpected places

Sonia Garel, a neuroscientist in Paris, France, is trying to solve the riddle of how a mammal’s brain is wired up as it develops. Like all researchers, there are times when her own brain’s complex wiring presents a major challenge. “Sometimes we believe that if we sit and think hard enough, a creative approach will come to our mind – but science doesn’t always happen like that,” says Garel, who is an EMBO Member and group leader at the Institute of Biology of the École Normale Supérieure.

That’s when it can pay to shake things up. “Sometimes it means taking a step back, on other occasions confronting the problem head on – either way it requires a proactive approach,” Garel explains. “You need to create the right conditions: it takes time to get everyone’s input and when brainstorming you may need to set ground rules and assign facilitators.”

She adds: “It is useful to learn and employ idea-generating methods such as free association, where people can openly share ideas regardless of whether they relate directly to the challenge at hand, before moving on to development and implementation phases. Great ideas sometimes come from the most unexpected places, and it is also important to develop an atmosphere permissive of failure – it might not be the right idea, but that is OK.”

Define challenges, inspire ideas

EMBO Young Investigator Annika Guse, a cell biologist and group leader at Heidelberg University, Germany, wants to understand the molecular basis of the intimate symbiosis between corals and algae that drive the productivity of whole coral-reef ecosystems.

Corals are extremely fragile and finicky, and her lab is a long way from the sea, so her team uses a proxy organism – a sea anemone called *Aiptasia* – as a model. “You can take symbionts from corals, put them into our anemone and we can essentially recreate this environment in the lab,” says Guse. “Very little is currently known about the molecular mysteries of coral symbiosis: on the one hand this is great as it opens up so many questions, but on the other people can get lost in their own wacky hypotheses, so there is a balance to be had.”

This is why it is important to create a structure in which to define challenges, inspire new ideas and ultimately deliver on them, Guse explains. “It is particularly important to listen to people, give room for trial and error, and to encourage debate,” she says.

“Every creative team needs different potentials or ‘superpowers’, and I like diverse backgrounds, both in terms of expertise and outside interests. It is also important to reflect on yourself: sometimes

our work involves travelling as a team – as corals only reproduce once a year the work can be highly unpredictable so it is important to immerse and let go of perfectionism.”

Get people talking

Jiri Damborsky’s work is based on harnessing the power of what is perhaps nature’s most creative process: evolution. His group members modify the structures of proteins to try to improve their biological activity and stability. They also develop software applications to help other researchers to do this more effectively.

“Creativity is essential at many different levels,” says the protein engineer and group leader at Masaryk University, Brno, Czech Republic. “We could be thinking about how we can manipulate a protein structure and modify its properties, or we might be looking into how to make a web interface more intuitive for our user community.”

The EMBO Young Investigator leads a diverse team of 40 researchers. When it comes to nurturing creativity, he first and foremost seeks to get people talking: “We have group meetings with time set aside for discussions, journal clubs, project meetings that bring smaller teams together, outreach seminars, and group retreats,” he explains.

“We also apply methods of creative planning that help move beyond habitual thinking. It is good to have a phase where you inspire many ideas and don’t immediately assess whether they are good or bad. Sometimes the mathematician’s view of biology is very different to the chemist’s.”

Building the capacity for creativity is ultimately about initiating a setting where people feel good, Damborsky says. “In an academic environment, it is very easy to feel under pressure and stress; we need to take care that people feel well – whether it is by providing settings with unlimited time for discussion, ensuring regular one-on-one meetings to discuss progress, promoting social exchange, or simply encouraging something that relaxes you like listening to music. If people feel comfortable and happy, they are much more creative.”

Information about the course

The EMBO Creative Problem Solving for Scientists course will take place between 9 and 11 September 2019 in Heidelberg, Germany. It is open to all group leaders and senior postdocs who want to enhance their own creativity and help others develop more creative ideas

The course will cover:

- approaching behavioural change in the scientific world
- establishing a simple system to promote and foster creativity in the lab
- a creative process to clarify a problem, generate novel ideas, and develop those ideas into solutions
- techniques to help break habitual thinking patterns

<http://lab-management.embo.org/dates/tr-create-2019>

A week of science and training

Young Investigator Programme PhD Course took place in Heidelberg



34 PhD students working in the labs of EMBO Young Investigators and Installation Grantees began 2019 with an intense week of learning new skills and discussing their science at the annual EMBO Young Investigator Programme PhD Course. The goal of the course is to provide the students with training in skills required for a scientific career alongside a broad overview of research in the life sciences.

Mariana Ascensão Ferreira, a PhD student at the Instituto de Medicina Molecular in Lisbon, Portugal, says her supervisor, Nuno Barbosa-Morais, encouraged her to apply. Another PhD student had attended the course in 2016 and had come back “with several tips to improve communication, presentation and writing practices”.

Another attendee, Andres M. Herrero-Ruiz, a PhD student working with Silvia Jimeno-González and Felipe Cortés-Ledesma at CABIMAR

in Sevilla, Spain also knew about the course from other students in the lab. And, like Ferreira, he was looking to improve his communication skills. “I wanted to take part because I’m aware how important it is to be clear and organized to effectively communicate with others,” he says.

Developing career skills

In addition to presenting their research as talks or posters and hearing scientific presentations from EMBO Young Investigators, the students spent the majority of the week taking part in a variety of soft-skills training. These included sessions on presenting science through writing, oral presentations and figures; career advice; grant writing; and reviewing a manuscript.

“I brought back to the lab several tips and tricks that are easy to share and to remember in our daily jobs,” reflects Ferreira. “Probably one of the most important things I learnt is that it is

worth taking some time to understand the interests of the audience when presenting my work.”

Herrero-Ruiz says one of his favourite parts was the ‘Introduction to grant writing’ lecture. “It was a really interesting exercise that required the use of all the concepts discussed during the course,” he explains. “We had to carefully choose the scope and depth of the background, propose an interesting question and summarize the critical results to formulate a proposal based on our own work.”

Valle Montalvo Romeral, a PhD student in Guadalupe Sabio Buzo at the Spanish National Center for Cardiovascular Research in Madrid, Spain, adds that she left the course with a clearer idea of what to do next in her career and increased confidence in herself. She concludes: “I learnt different tools to improve myself, in both a professional and a personal way.”

Courses & Workshops portfolio extended

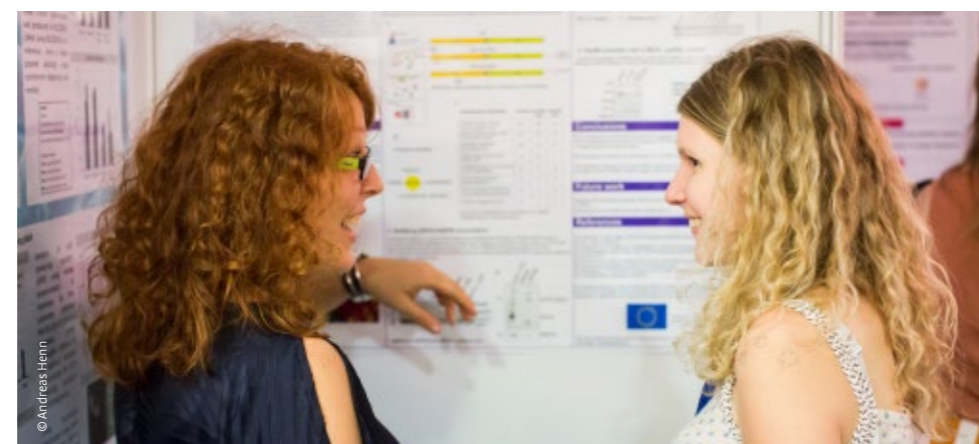
Partnership with The Company of Biologists supports scientific meetings outside of Europe

In partnership with The Company of Biologists, EMBO now supports scientific meetings in Brazil, Canada, China, Japan and South Korea. EMBO funds more than 90 workshops and practical courses in Europe each year. Through its Global Activities Programme, EMBO helps to improve interactions between scientists in Europe and in other parts of the world. The new joint initiative with The Company of Biologists forms part of these efforts.

Luis Valente, Head of EMBO Global Activities explains: “Funding for EMBO Courses and Workshops is normally limited to meetings taking place in EMBO Member States, Associate Members States – namely India and Singapore – or countries and territories covered by co-operation agreements – namely Chile and Taiwan.”

He continues: “Thanks to the generous grant from The Company of Biologists, we are able to extend the funding opportunities to scientific meetings taking place in Brazil, Canada, China, Japan and South Korea.”

This collaboration is not the first time that EMBO has partnered with other organizations to ensure high-quality scientific meetings



are available to life scientists across Europe and beyond. Together with the Federation of European Biochemical Societies (FEBS) EMBO supports up to five lecture courses a year on topics in biochemistry, molecular biology and related areas. And since 2017, EMBO and the Wellcome Trust/DBT India Alliance (referred to as ‘India Alliance’) jointly fund up to three meetings per year in India.

Scientists interested in organizing an EMBO Workshop in one of the above countries should apply through the EMBO Courses & Workshops Programme. The deadlines are 1 March and 1 August for workshops held in the following year.

More information :
embo.org/funding-awards/courses-workshops

A virtual metabolism map

Metabolism plays a role in many human diseases and is modulated by intrinsic and extrinsic factors. Former EMBO Young Investigator Ines Thiele, National University of Ireland, Galway, and her colleagues have created a digital tool that enables researchers to search, probe and model these interactions.

“The Virtual Metabolic Human (VMH) database connects human metabolism with genetics, human-associated microbial metabolism, nutrition and diseases,” explains Thiele. “At its core are genome-scale reconstructions of human and gut microbial metabolism, which have been assembled based on manually curated genomic, biochemical, and phenotypic information. These reconstructions are amenable for computational modeling and can be downloaded.”

The database has four key features: (i) each entity contains data on biochemical properties; (ii) the entries are interconnected through a common nomenclature; (iii) human metabolism maps allow for querying and overlaying of experimental and computational data; and (iv) the database is connected to 50 external databases.

“We are continuously expanding the database content and its links to biomedical and clinical information,” explains Thiele. “We hope that it will be of use to researchers from different fields, including metabolomics, microbiome and systems biomedicine.”

<https://vmh.life>
Doi: 10.1093/nar/gky992



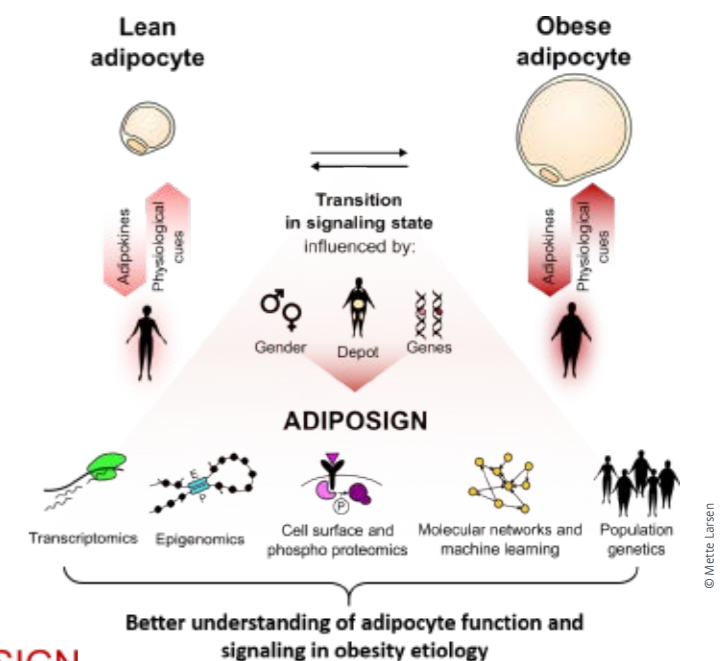
UCL launches motor neuron disease research centre

The new University College London (UCL) Queen Square Centre for Motor Neuron Disease Research will officially launch with a research symposium on 6 September 2019. The centre combines expertise in basic, translational and clinical research relating to motor neuron diseases that is located in the institutes and hospitals in and around Queen Square, London, UK.

UCL-affiliated EMBO Members Giampietro Schiavo and Elizabeth Fisher are involved in the establishment of the virtual centre. “This is an exciting new development,” says Fisher. “We look forward to connecting researchers and setting up future collaborative work. The symposium in September is one of the ways in which we will do this.”

To register for the open symposium, email Deborah Hadley: d.hadley@ucl.ac.uk

ADIPOSIGN: a focus on adipocyte signalling



ADIPOSIGN
Center for Adipocyte Signaling

Adipocytes serve as critical signaling hubs

EMBO Member Susanne Mandrup from the University of Southern Denmark in Odense has received 60 million Danish kroner from the Novo Nordisk Foundation’s Challenge Program to establish a new research center. The Center for Adipocyte Signaling, or ADIPOSIGN, will combine experimental and computational approaches to elucidate how adipocytes receive and respond to signals at the level of the cell membrane and the (epi)-genome.

ADIPOSIGN is a collaborative endeavor between Susanne Mandrup and Jan-Wilhelm Kornfeld at the University of Southern Denmark, EMBO Member M. Madan Babu at the MRC LMB in Cambridge, UK, and Zachary Gerhart-Hines at the University of Copenhagen in Denmark.

The objective of the centre is to understand the molecular origin of variation in adipocyte function

depending on depot, gender, and genetics and the way this variation impacts on the etiology of obesity and its comorbidities. ADIPOSIGN will support ongoing activities in the Center of Excellence in Functional Genomics of and Tissue Plasticity (ATLAS), also led by Mandrup, which focuses on investigating cellular plasticity of the liver and fat tissue during development and regression of obesity.

Mandrup calls ADIPOSIGN “a very exciting project that investigates the function of fat cells in a completely new and multidisciplinary way, thus strengthening our research in molecular and cellular understanding of obesity.”

ADIPOSIGN will be launched on 1 May 2019, and an opening symposium will take place at the University of Southern Denmark on 27 May 2019.

www.sdu.dk/adiposign

Science for the living planet

Planet Earth is facing unprecedented environmental challenges due to human expansion, yet our current understanding of the planet's complex systems is mostly insufficient for science-based intervention," says EMBO Member Vincent Savolainen. As director of the Grand Challenges in Ecosystems and the Environment (GCEE) Initiative at Imperial College London, UK, he is working on scientific solutions to global environmental challenges.

The GCEE was launched in 2013, and serves as a hub for world-leading, collaborative science with a focus on finding solutions to four global challenges: understanding biodiversity origins and losses; new approaches to environmental monitoring and evaluation; engineering complex ecosystems; and predicting and mitigating environmental change.

Researchers from across Imperial College London, including the life sciences, the Centre for Environmental Policy, the School of Public Health, Civil and Environmental Engineering and the Grantham Institute for Climate Change and the Environment, participate in the initiative. It is therefore uniquely positioned at the interface between science, practitioners and policymakers.



Vincent Savolainen

In the past five years, GCEE has hosted and trained 128 PhD students and 781 Masters students. "We are always looking for individuals with innovative ideas and welcome applications from people in any sector, so please get in touch," says Savolainen. In addition to creating relationships between academia, industry and local

communities, he adds, "we are particularly interested in developing research in agricultural technology and food security in the next two years."

www.imperial.ac.uk/ecosystems-and-environment
Contact: v.savolainen@imperial.ac.uk

ReMedy research and infrastructure in Warsaw

EMBO Members Agnieszka Chacinska and Magda Konarska have established a new research initiative, Regenerative Mechanisms for Health (ReMedy), at the Centre of New Technologies of the University of Warsaw, Poland.

Better understanding of the stress-induced mechanisms that affect cells is the necessary first step towards the development of new treatments and medicines. Funded by the Foundation for Polish Science with nine million euros, ReMedy will focus on the adaptive mechanisms triggered by stress at the molecular and cellular level. Seven research teams will combine diverse expertise in a multidisciplinary setting.

In addition to leading new research, ReMedy will also provide infrastructure, including a new proteomics core facility for ultra-fast and ultra-high mass range protein identification, and a cryogenic transmission electron microscopy facility for structural analysis of dynamic biological macromolecules at near-atomic resolution. Equipment and technologies at the Centre of New Technologies and ReMedy will be centralized into dedicated facilities to make them widely accessible to the wider scientific community in Poland and internationally.

<https://cent.uw.edu.pl/en/>



Magda Konarska



Agnieszka Chacinska

© Marcin Mizerski for International Institute of Molecular and Cell Biology, Warsaw

Training future researchers

The University of Strasbourg, France, launched the IMCBio (Integrative Molecular and Cellular Biology) Graduate School in autumn 2018. Through laboratory internships, training modules, summer schools, or a high-level doctoral training program, the IMCBio aims to develop and train the next generation of researchers in the biological sciences. The project is based on a strategic grouping of Strasbourg's molecular and cellular biology strengths from three laboratories of excellence. It is led by EMBO Member Bertrand Séraphin.

Seventeen Master's students were selected to be part of IMCBio and attended a range of seminars and training sessions as part of their first term in the programme. In addition to scientific discussions, these included a seminar on research integrity, delivered by EMBO Science Policy Officer Sandra Bendiscioli. The students also attended the EMBO Press course 'Scientific integrity: how to publish reproducible results'.

It was "a successful start to the school year," says Séraphin. "We received requests not only from French and foreign students who would like to join the CDK7 course, but also from other institutions interested in this teaching model."

www.igbmc.fr/formation/imcbio/

Awards of Excellence

EMBO MEMBERS

Feldberg Prize

Volker Haucke of the Leibniz-Forschungsinstitut für Molekulare Pharmakologie, Berlin, Germany has been awarded the Feldberg Prize 2020. The Feldberg Foundation awards the prize annually to scientists for the promotion of scientific exchange between British and German researchers in the field of experimental medicine, in particular in the disciplines of physiology and pharmacology.

Ambrogino d'Oro

Simona Polo, IFOM, Milan, received the Ambrogino d'Oro (gold medal) from the Mayor of Milan. The medal is bestowed annually to people who have made a significant contribution to the city of Milan in the field of entrepreneurship, culture, solidarity, science and research. Simona Polo received the honour for her outstanding achievements in biology.

Leibniz Preis

Hans-Reimer Rodewald, German Cancer Research Centre, Heidelberg, Germany, **Melina Schuh**, Max-Planck-Institut für biophysikalische Chemie, Göttingen, Germany, and **Brenda Schulman**, Max-Planck-Institut für Biochemie, Martinsried are among the ten recipients of the Leibniz Prize. The prizes are awarded annually by the German Research Foundation for outstanding research in different fields. Each recipient receives 2.5m euros to support their research.

Erwin Schrödinger Award

The Austrian Academy of Sciences awarded the Erwin Schrödinger Award to **Elly Tanaka** of the IMP, Vienna, Austria, for her outstanding contributions to the field of regeneration biology. Elly Tanaka shares the award with Peter Jonas of the Institute of Science and Technology Austria. She receives an annual stipend of 15,000 euros.

Louis-Jeantet Prize

Luigi Naldini, San Raffaele Hospital, Milan, Italy, and **Botond Roska**, Institute of Molecular and Clinical Ophthalmology, Basel, Switzerland were honoured with the Louis-Jeantet Prize. Naldini received the Jeantet-Collen Prize for Translational Medicine for his pioneering work taking gene therapy from the bench to the bedside. Roska was honoured with the Louis-Jeantet Prize for Medicine for the discovery of basic principles of visual information processing and the development of therapeutic strategies to restore vision in retinal disorders. They received 500,000 each.

Scienza Madre Award

Lucia Banci, University of Florence, Italy, and **Emmanuelle Charpentier**, Max Planck Institute for Infection Biology, Berlin, Germany, are among the first ever recipients of the 'Scienza Madre' award by the Italian National Institute for Infectious Diseases Lazzaro Spallanzani. The award recognizes women who have distinguished themselves in research and science. The third recipient is Laurence Zitvogel, University of Southern Paris, France.

Léopold Griffuel Award

The French Fondation ARC awarded the Léopold Griffuel Award to **Steve Jackson**, University of Cambridge, UK. Jackson receives the award for translational and clinical research, which is endowed with 150,000 euros, for his work on DNA damage repair and his role in the development of medicines such as PARP1 and 2 inhibitors, which are currently used for cancer treatment.

Mid-Career Sanofi-Institut Pasteur Award

Maria Manuel Mota, Insitute of Molecular Medicine (iMM) in Lisbon, Portugal, has been awarded the International Mid-Career Sanofi-Institut Pasteur 2018 Award in Microbiology & Infection for her work on the biology and physiology of malaria. The award is endowed with a prize of 150,000 euros.

Rappaport Prize for Excellence

The 2019 Rappaport Prize for Excellence in biomedical research was awarded to **Ehud Gazit**, Tel Aviv University, Israel. The award recognizes groundbreaking or innovative research with potential applications in advancing human health. Gazit receives the prize for his work on nano-structures, amyloid toxicity, and approaches for treating degenerative disorders.

Tsuneko & Reiji Okazaki Award

Cyril Zipfel, University of Zurich, Switzerland, received the 4th Tsuneko & Reiji Okazaki Award for his work on plant immunity. The award recognises early-career scientist who has made significant contributions to biology through original approaches or transformative technologies.

Roger de Spoelberch Prize

The Roger de Spoelberch Prize was awarded to **Frank Bradke**, German Center for Neurodegenerative Diseases, Bonn, Germany for his research on neuronal regeneration that lays the foundation for novel therapies such as the treatment of spinal cord injuries. The prize is endowed with 750,000 euros.

Knight of the French National Order of the Legion of Honour

Francis-André Wollman, Institute of Physico-Chemical Biology, Paris, France, was elected a knight of the French National Order of the Legion of Honour. The honour recognizes a minimum 20 years of public service or 25 years of professional activity with particular merits.

EMBO YOUNG INVESTIGATORS

National Bioscience Award and Rajib Goyal Prize

Arun Shukla received two honours. The National Bio-science Award for Career Development Prize recognizes unique contributions in the biological sciences carried out in India during the last five years and is endowed with a cash prize of 200,000 Indian rupees and a grant of 1.5m Indian rupees.

The Rajib Goyal Prize is given by Goyal Foundation and Kurukshetra University in India and recognizes Indian scientists under the age of 45. Shukla receives the prize in the life science category for his work on G-protein coupled receptors.

Good Read – Publications from the EMBO community

The mitotic spindle is chiral due to torques within microtubule bundles

Iva Tolić and colleagues
Nature Communications | 3 September 2018
Doi: 10.1038/s41467-018-06005-7

The kinetoplast kinetochore protein KKT4 is an unconventional microtubule tip-coupling protein

Bungo Akiyoshi and colleagues
Journal of Cell Biology | 12 September 2018
Doi: 10.1083/jcb.201711181

An ER surface retrieval pathway safeguards the import of mitochondrial membrane proteins in yeast

Maya Schuldiner and colleagues
Science | 14 September 2018
Doi: 10.1126/science.aar8174

Self-assembly of functional nanostructures by short helical peptide building blocks

Ehud Gazit and colleague
Protein & Peptide Letters | 17 September 2018
Doi: 10.2174/0929866525666180917163142

Small Molecules Co-targeting CKIα and the Transcriptional Kinases CDK7/9 Control AML in Preclinical Models

Yinon Ben-Neriah and colleagues
Cell | 20 September 2018
Doi: 10.1016/j.cell.2018.07.045

A cancer associated somatic mutation in LC3B attenuates its binding to E1-like ATG7 protein and subsequent lipidation

Adi Kimchi and colleagues
Autophagy | 21 September 2018
Doi: 10.1080/15548627.2018.1525476

Bacterial Noncoding RNAs Excised from within Protein-Coding Transcripts

Rotem Sorek and colleague
Molecular Biology and Physiology | 25 September 2018
Doi: 10.1128/mbio.01730-18

Primary transcripts: from the discovery of RNA processing to current concepts of gene expression

Klaus Scherrer
Experimental Cell Research | 26 September 2018
Doi: 10.1016/j.jyexcr.2018.09.011

OTX2 restricts entry to the mouse germline

Ian Chambers, Antonio Simeone and colleagues
Nature | 3 October 2018
Doi: 10.1038/s41586-018-0581-5

Gene expression variability across cells and species shapes innate immunity

Sarah Teichmann and colleagues
Nature | 24 October 2018
Doi: 10.1038/s41586-018-0657-2

DNA methylation dynamics during embryonic development and postnatal maturation of the mouse auditory sensory epithelium

Karen Avraham and colleagues
Scientific Reports | 26 November 2018
Doi: 10.1038/s41598-018-35587-A

The formation of chromatin domains involves a primary step based on the 3-D structure of DNA

Giorgio Bernardi and colleagues
Scientific Reports | 13 December 2018
Doi: 10.1038/s41598-018-35851-0

Correlative cryo-electron microscopy reveals the structure of TNTs in neuronal cells

Chiara Zurzolo and colleagues
Nature Communications | 21 January 2019
Doi: 10.1038/s41467-018-08178-7

The Limited Information Capacity of Cross-Reactive Sensors Drives the Evolutionary Expansion of Signaling

Michal Komorowski and Dan S. Tawfik
Cell Systems | 23 January 2019
Doi: 10.1016/j.cels.2018.12.006

UBQLN4 Represses Homologous Recombination and Is Overexpressed in Aggressive Tumors

Yosef Shiloh and colleagues
Cell | 24 January 2019
Doi: 10.1016/j.cell.2018.11.024

A Significant Expansion of Our Understanding of the Composition of the Human Microbiome

Eran Segal and colleague
mSystems | 29 January 2019
Doi: 10.1128/mSystems.00010-19

SraL sRNA interaction regulates the terminator by preventing premature transcription termination of rho mRNA

Cecília Arraiano and colleagues
PNAS | 4 February 2019
Doi: 10.1073/pnas.1811589116

Type I interferon induces CXCL13 to support ectopic germinal center formation

Michelle Lintermann and colleagues
Journal of Experimental Medicine | 5 February 2019
Doi: 10.1084/jem.20181216

Deterministic Somatic Cell Reprogramming Involves Continuous Transcriptional Changes Governed by Myc and Epigenetic-Driven Modules

Amos Tanay, Ido Amit, Yitzhak Pilpel, Jacob Hanna and colleagues
Cell Stem Cell | 7 February 2019 Feb
Doi: 10.1016/j.stem.2018.11.014

R-Loops Enhance Polycomb Repression at a Subset of Developmental Regulator Genes

Ana Pombo and colleagues
Molecular Cell | 7 March 2019
Doi: 10.1016/j.molcel.2018.12.016

Practical Courses

DK-Odense | 2–9 May 2019 | M.R. Larsen

Characterisation of post-translational modifications in cellular signalling

DE-Heidelberg | 5–10 May 2019 | J. Krijgsveld

Quantitative proteomics: Strategies and tools to probe biology

DE-Heidelberg | 12–18 May 2019 | Q. Deng

Single cell omics

JP-Nagoya | 21–30 May 2019 | A. Maizel

Functional live imaging of plants

DE-Heidelberg | 2–7 June 2019 | A. Hendrix

Extracellular vesicles: From biology to biomedical applications

UK-Didcot | 10–19 June 2019 | N. Burgess-Brown

High-throughput protein production and crystallization

CZ-České Budějovice | 10–20 June 2019 | J. Nebesarova

Advanced methods of electron microscopy in cell biology

DE-Heidelberg | 12–19 June 2019 | J.E. González-Pastor

Microbial metagenomics: A 360° approach

IT-San Michele all'Adige | 16–30 June 2019 | C. Donati

Bioinformatics and genome analyses

NL-Wageningen | 1–5 July 2019 | C. Welte

Breathless microbes: Techniques and theory in anaerobic microbiology

UK-London | 7–20 July 2019 | C. Kiecker

Developmental neurobiology: From worms to mammals

FR-Paris | 8–13 July 2019 | M. Nilges

Integrative and cellular structural biology

DE-Garching | 26 July–2 August 2019 | M. Sattler

Structure, dynamics and function of biological macromolecules by NMR

DE-Dresden | 25 August–6 September 2019 | M. Sarov

Mouse genome engineering

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. Stripecte

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

Workshops

DE-Heidelberg | 1–4 May 2019 | A. Akhtar

Chromatin and epigenetics

GR-Heraklion | 7–10 May 2019 | F. Bradke

Cell biology of the neuron: Polarity, plasticity and regeneration

PT-Cascais | 11–15 May 2019 | L. Jansen

Chromosome segregation and aneuploidy

FR-Le Poulguen | 12–16 May 2019 | C. Lamaze

Caveolae and nanodomains: Translating structural principles and dynamics into function

CZ-Prague | 15–18 May 2019 | P. Svoboda

Awakening of the genome: The maternal-to-zygotic transition

GR-Athens | 19–23 May 2019 | G. Kollias

Mesenchymal cells in inflammation, immunity and cancer

IL-Rehovot | 19–24 May 2019 | J. Abramson

ThymE: T cell and thymus biology

JP-Tokyo | 20–22 May 2019 | P. Carninci

Single cell biology

GR-Kyllini | 20–24 May 2019 | A. Papanonis

The genome in three dimensions

IT-Baveno | 25–28 May 2019 | L. Tamagnone

Neural guidance molecules in development and disease

Editorial

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ES-Sant Feliu de Guixols | 26–31 May 2019 | S. Iden

Cell polarity and membrane dynamics

FR-Paris | 30 May–2 June 2019 | A. Hosmalin

Antigen processing and presentation 10 (APP 10)

SE-Lund | 9–12 June 2019 | T. Den Blaauwen

Bacterial cell division: Closing the gap

CZ-Nové Hradý | 23–28 June 2019 | J. Carey

Synergy of experiment and computation in quantitative systems biology

ES-Barcelona | 2–5 July 2019 | J. Sharpe

Limb development and regeneration: New tools for a classic model system

UK-Norwich | 14–18 July 2019 | T. Mock

The molecular life of diatoms

ES-Barcelona | 14–19 July 2019 | J. Ayte

Fission yeast

GR-Chania | 22–26 July 2019 | G. Christophides

Molecular and population biology of mosquitoes and other disease vectors

FR-La Rochelle | 25–29 August 2019 | C. Mézard

Meiosis 2019

UK-Crieff | 26–30 August 2019 | K.M. Ryan

Autophagy: From molecular principles to human diseases

UK-Oxford | 1–5 September 2019 | P. Klenerman

CD1-MR1: Beyond MHC restricted lymphocytes

ES-Sant Feliu de Guixols | 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 Ledesma

DNA topology and topoisomerases in genome dynamics

DE-Berlin | 17–20 September 2019 | G.R. Lewin

Beyond the standard: Non-model vertebrates in biomedicine

Symposia

EMBO | EMBL Symposia

DE-Heidelberg | 15–18 May 2019 | H. Kaessmann

The identity and evolution of cell types

DE-Heidelberg | 3–6 July 2019 | F. Schnorrer

Mechanical forces in development

DE-Heidelberg | 10–13 July 2019 | A. Typas

New approaches and concepts in microbiology

DE-Heidelberg | 11–13 September 2019 | J. Zaugg

Multomics to mechanisms: Challenges in data integration

India | EMBO Symposia

IN-Kalyani | 9–12 November 2019 | S. Mukherjee

Human microbiome: Resistance and disease

Lecture Courses

EMBO | FEBS Lecture Course

GR-Spetses Island | 23–31 May 2019 | S. Rose-John

Molecular mechanisms of tissue injury, repair and fibrosis

IT-Venice | 26–30 August 2019 | J. Johannes

Venice summer school 2019: Mechanism in development and evolution

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

CL-Santiago | 14–20 October 2019 | D. Svergun

Structural and biophysical methods for biological macromolecules in solution

CL-Santiago | 14–20 October 2019 | D. Svergun

Structural and biophysical methods for biological macromolecules in solution

CL-Santiago | 14–20 October 2019 | D. Svergun

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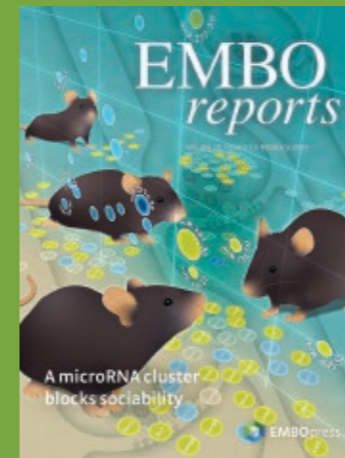
The next issue of *EMBO Encounters* will be dispatched in **July 2019**. Please send your suggestions, contributions and news to communications@embo.org by **15 May 2019**.

UPCOMING DEADLINES

Long-Term Fellowships throughout the year

Courses, Workshops and Global Exchange Lecture Courses
1 August 2019

Women in Science Award
15 October 2019



microRNAs in social behavior

MicroRNAs are short snippets of RNA that do not code for protein. Rather, they function mainly by regulating the stability or translation rate of mRNAs, thus indirectly impacting on protein production. Each microRNA typically targets hundreds of different mRNAs, making them ideal for coordinating complex cellular processes.

Lackinger *et al.* have now uncovered that a microRNA cluster termed miR379-410 is involved in the control of social behavior. Mice lacking a functional miR379-410 complex were more sociable than their littermates, indicating that miR379-410 restricts sociability in healthy animals. Moreover, neurons in the hippocampus of the brain in mice lacking miR379-410 formed more

connections and were more likely to transmit electrical signals. While the current study uses mice as model organisms, there are indications that the miR379-410 complex is also involved in the regulation of social behavior in humans. The researchers hope that their study will contribute to the development of treatments to ameliorate social deficits in conditions such as autism spectrum disorder or schizophrenia.

A placental mammal-specific microRNA cluster acts as a natural brake for sociability in mice
Martin Lackinger *et al.*
Read the paper: embo.embopress.org/content/20/2/e46429



Gluten: the cystic fibrosis connection

Coeliac disease is a severe intestinal disorder. When people suffering from the disease eat gluten, a substance found in wheat, rye, and barley, their immune system attacks their body's own cells, damaging the mucosal surface of the small intestine. Because the prevalence of coeliac disease is about three times higher in patients who also suffer from cystic fibrosis, a group of researchers took a closer look at this co-occurrence. They found that the genetic cause of cystic fibrosis – a gene termed transmembrane conductance regulator (CFTR) – also plays a role in coeliac disease.

Gluten is difficult to digest, so that relatively long peptides enter the intestine. Villella *et al.* discovered that one specific peptide, P31-43, directly binds to CFTR and impairs its function. This interaction triggers cellular stress and inflammation in the intestine. Moreover, inhibiting the interaction between P31-43 and CFTR with a potentiator of CFTR protects gluten-sensitive epithelial cells from the detrimental effect of gluten. This suggests that CFTR potentiators, which have been developed to treat cystic fibrosis, could also be explored for the development of a remedy for celiac disease.

A pathogenic role for cystic fibrosis transmembrane conductance regulator in celiac disease

Valeria R. Villella *et al.*

Read the paper: embo.embopress.org/content/38/2/e100101

Effects of OTULIN loss uncovered

OTULIN-related autoinflammatory syndrome (ORAS) is a rare autoimmune disease caused by mutations in the OTULIN gene. The disease was only discovered recently and only five patients have been described to date. Damgaard *et al.* now report a new case of ORAS and shed light on the pathology of the disease and its treatment options.

When OTULIN function is impaired, cells are hyper-responsive to immune signaling. OTULIN is a deubiquitinase, meaning that it cleaves specific ubiquitin chains attached to proteins. Many proteins are tagged with ubiquitin to regulate their activity, among them key regulators of immune signaling.

Damgaard *et al.* now show that different cell types respond differently to OTULIN loss. OTULIN-deficient myeloid cells spontaneously activate an immune response and secrete TNF, a well-known inflammatory signal. In other cells, in contrast, a feedback loop prevents autoimmunity. Nonetheless, these cells may respond to TNF secreted by myeloid cells and undergo cell death. In line with this model, the researchers found that haematopoietic stem cell transplantation to replace OTULIN-deficient myeloid cells can alleviate the symptoms of the disease.

OTULIN deficiency in ORAS causes LUBAC degradation, dysregulated TNF signalling, and cell death

Rune Busk Damgaard *et al.*

Read the paper: embo.embopress.org/content/early/2019/02/25/emmm.201809324

Which tubulin makes a platelet?

Microtubules are cytoskeletal elements involved in a plethora of cellular processes such as maintenance of cell shape, transport, or cell division. They are mainly made up of α - and β -tubulin subunits. However, there are a number of different isoforms of both α - and β -tubulin, and the exact composition of microtubules varies between cells. β 1-tubulin, for example, plays a critical role in the formation of blood platelets from megakaryocytes.

Platelets are small, disc-shaped cells essential for blood clotting. Strassel *et al.* now for the first time showed that the α -tubulin composition in platelets is also important. Using sophisticated methods, the researchers uncovered a strong enrichment of α 4A-tubulin in platelets. Mice deficient for α 4A-tubulin show defects in platelets and megakaryocytes that are strikingly similar to defects observed in mice lacking beta-1 tubulin. Moreover, the study is the first report of a patient with a mutation in the α 4A-tubulin gene showing signs of macrothrombocytopenia – a rare congenital disease characterized by abnormally large platelets. The research allows for a better understanding of possible genetic underpinnings of the disease.

An essential role for α 4A-tubulin in platelet biogenesis

Catherine Strassel *et al.*

Read the paper: www.life-science-alliance.org/content/2/1/e201900309

Testing for liver disease

Non-alcoholic fatty liver disease (NAFLD), a build-up of fat in the liver caused by unhealthy diet, causes no symptoms initially but can develop into end-stage liver cirrhosis with limited treatment options. A study by EMBO Member Matthias Mann and colleagues paves the way for a simple blood test to detect early stages of NAFLD, opening up the possibility of preventing the development of liver cirrhosis through lifestyle changes or pharmaceutical intervention.

To date, the standard procedure for diagnosing NAFLD is liver biopsy – a cumbersome and costly procedure that can lead to complications. Non-invasive methods that reliably detect early stage NAFLD are therefore urgently required. Niu *et al.* investigated the plasma proteome of NAFLD patients.

Using sophisticated mass spectrometry technologies, they uncovered six proteins that accumulate in the plasma of patients with non-symptomatic NAFLD. One of the proteins, PIGR, is of special interest. It is enriched in the plasma of pre-symptomatic NAFLD patients and its concentration increases the further the disease progresses, making PIGR an attractive biomarker candidate for liver damage tests.

Plasma proteome profiling discovers novel proteins associated with non-alcoholic fatty liver disease

Lili Niu *et al.*

Read the paper: <http://msb.embopress.org/content/15/3/e8793>



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molecular medicine

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Abstract submission 14 May

Late abstract submission 31 July

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Michal Schwartz

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