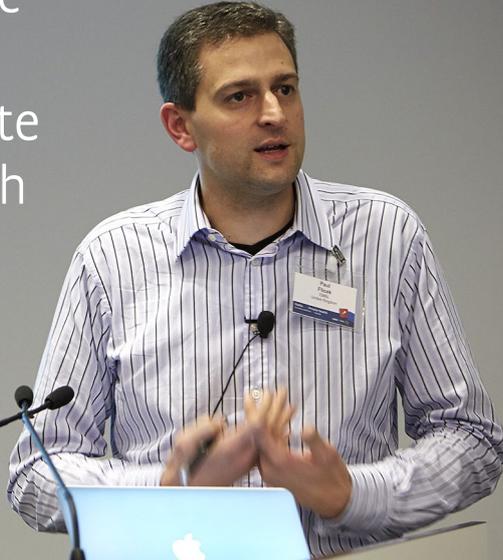


EMBO *encounters*

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SUBMERGED BEAUTY

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Director's welcome to the 50th anniversary of EMBO

2014 is the 50th anniversary of EMBO and it is a pleasure to inform you about our plans for celebration. When I became Director in 2010, I was familiar with some of the remarkable work of EMBO since I had served on committees responsible for the membership and publications. Since then, my appreciation has deepened further by working more closely with its community of scientists and staff. We can be proud of what EMBO has achieved. Since 1964, EMBO has created, developed and nurtured a network of some of the best life scientists who have helped to build a successful European research environment.

Over the course of 2014, we have planned activities and events to highlight the many contributions that EMBO has made to the life sciences. We will be looking back on achievements, reflecting on progress, and also taking a look at what is in store for our organization. I invite you to explore our anniversary web pages at www.embo.org/anniversary that describe the programme of events planned for 2014. The web pages include an interactive anniversary timeline where you can learn more about EMBO and meet some of the people who have influenced the organization over the years. We will also be keeping you informed through our anniversary blog (www.embo.org/anniversary/blog).

For our anniversary, we have been working with Georgina Ferry on a collection of interviews with scientists who have witnessed and influenced the history of molecular biology and EMBO. Selected material from the book will be made

available via the timeline on our web site and the book will be published by April this year. These personal accounts comprise engaging information about the formative years of molecular biology and we hope this will be of interest to our wider audience.

Three anniversary events are planned in 2014, a science and policy meeting which will be held in Heidelberg in July, a joint anniversary event with FEBS and the French Society of Biochemistry and Molecular Biology that will take place in Paris at the end of August and a special membership meeting scheduled for October (see Anniversary events in 2014 for dates and location).

EMBO was founded in 1964 to promote molecular biology in Europe. Today molecular biology pervades all the life sciences, from agriculture and medicine to forensics and ecology, and it continues to be a foundation for essential scientific progress. The EMBO story is really about the

growth of a scientific community in Europe. It is the spirit of this community that we hope to capture in our anniversary year.

I would like to thank everyone who has contributed to EMBO over the past fifty years. I would also like to thank all the people who have helped to organize the celebratory activities and events that will take place in 2014.

We are already looking forward to the next decades and further scientific achievements.

Maria Leptin EMBO Director



ANNIVERSARY EVENTS IN 2014

EMBO | EMBL
Science and Policy Meeting
 2–3 July
 EMBL Advanced Training Centre,
 Heidelberg, Germany

The FEBS–EMBO Conference
2014
 30 August – 4 September
 Palais des Congrès, Paris, France

2014 Anniversary
EMBO Members' Meeting
 29–31 October
 Heidelberg, Germany

Public and private health

The contribution of genomics to individual and public health was the topic of the 14th EMBO | EMBL Science and Society Conference held at EMBL in Heidelberg last November. More than 200 attendees and leading experts in the field discussed how knowledge and technological advances in genomics could revolutionize health care.

Liselotte Højgaard outlined the societal challenges in her keynote speech: an ageing population, the prevalence of major diseases such as cancer, cardiovascular disease or diabetes and increasing costs for health care. Genomics has considerable potential to transform medicine, but it will require the involvement of all stakeholders – patients, researchers, healthcare professionals and politicians.

Jan Korbel, Geneviève Almouzni and Paul Flicek highlighted the scientific and technological challenges. As cells accumulate mutations over time, not all body cells share the same genome, which makes it harder to predict disease risk based on sequencing a few select cells. Moreover, life and lifestyle leave so-called epigenetic marks—chemical modifications of DNA and the way it is organised—that probably determine health risks more than genetic changes. The technological advances themselves have created new problems: current sequencing technologies generate as much information within a day as the Human Genome Project did in a decade. It is a major task to store this exponentially growing amount of data and translate it into a better understanding of disease.

Eric Green explained that even while we have made enormous progress since 2003 when the complete human genome sequence was published, it will take many more years of intense research until a better understanding of disease can inform medical practice. Anne-Lise Børnens-Dale described how genomics is already benefiting cancer patients. Since cancer is mainly caused by massive genomic changes, genome sequencing is already being used to help physicians select the most effective treatments for patients.

Estee Török described another healthcare application of genomics and presented a detective story of how the technology was used to investigate and deal with an outbreak of methicillin-resistant *Staphylococcus aureus* (MRSA) on a hospital newborn care unit.

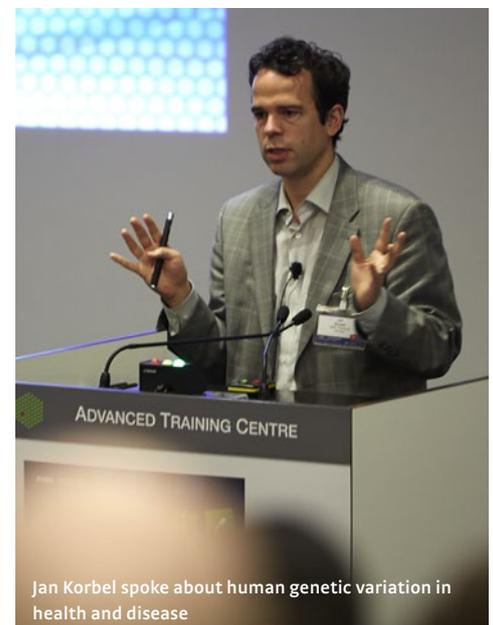
Translating genomics research into healthcare is not only a scientific and technological quest but it also a challenge for society. Jane Kaye reported how the Human Genome Project was a starting point to investigate the ethical, legal and societal implications of genetics. She explained how initial public concerns have changed over time and how the social research around genomics itself has adapted. Bartha Knoppers discussed the issue of sharing and protecting patients' genomic and health data in light of international research collaborations.

Buddug Cope and Helena Kääriäinen spoke about the perspectives and expectations of patients and parents of children with a genetic disease. To better help them would require new guidelines for clinical counseling but also educating medical staff about how to deal with genetic information and explain the implications to patients. The importance of private genetic and health information also makes a strong case for patient empowerment to include them into discussions about therapy and lifestyle options. Timothy Caulfield critically discussed the role of private genetic diagnostics companies and the limits of making health predictions based on genomic data. He argued that lifestyle – such as

smoking, lack of exercise or a healthy diet – are much more important risk factors than genes. Wolfram Henn highlighted the application of whole genome sequencing to prenatal genetic diagnosis, which raises questions about how doctors and parents handle the knowledge about possible diseases and disease risks even before a child is born.

The Public and Private Health conference was an ideal opportunity for experts, professionals and laypersons to discuss the opportunities of and challenges for genomics research to improve health and wellbeing.

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Holger Breithaupt Senior Editor, *EMBO reports*



Life sciences in India – on the right track

The past twenty years have seen tremendous changes in the life science sector in India. New initiatives have helped to build basic science, establish laboratories, set up funding and recruitment programmes for postdoctoral researchers and faculty. India’s challenge now is to improve the flow of funds, to retain or bring back their best brains and to become more competitive internationally.

As in many other fields, India has become a worldwide hub for science and technology. It participates in large-scale projects such as the International Rice Genome Project, Large Hadron Collider and ITER – one of the biggest international collaborations to produce electricity from nuclear fusion. Indian government spending on research and development (R&D) has grown by seven per cent each year between 2007 and 2012. By contrast, in Europe it fell by 0.5 per cent and in the United States by 2 per cent a year (1).

The focus of research in India is traditionally engineering and IT – sectors that are easy to commercialise. The country also hugely invested in nuclear R&D and the national space programme. “Astronomers and physicists made excellent cases for investments of large sums of money in major intellectual quests that may have collateral practical benefits,” says EMBO Associate Member VijayRaghavan, who is a professor at the National Centre for Biological Sciences (NCBS) in Bangalore and head of the Department of Biotechnology (DBT) under the Ministry of Science and Technology.

Science – a historical effort

The quest for knowledge is deeply rooted in India’s identity as a nation. The country began to build a strong foundation in modern science during the first days of its independence. In the

1950s, India’s first Prime Minister Jawaharlal Nehru expanded support of the nation’s institutes of science and technology. In the sixties, India led the “green revolution,” which served as the basis for its efforts to feed its citizens and which set the stage for economic growth. Traditionally, there is a deep appreciation for learning. Academics who spend their time in research and teaching are highly valued.

The quest for knowledge is deeply rooted in India’s identity as a nation.

The life science sector is gaining ground. Innovative national research centres have been founded, including five new Indian Institutes of Education and Research, nine new Indian Institutes of Technology, a new National Institute of Science Education and Research and 28 new Central Universities. Several career-development and recruitment schemes for postdoctoral researchers have been set up. The rapid growth of India’s economy makes for a dynamic job market with many new job openings. New research projects help to understand how the immune system works against disease, and how nutrition and brain development are linked. Clinical, agricultural and biotechnology research is steadily gaining momentum.

Main players

The government support for creating new research centres, for funding and science infrastructure has been tremendous. “India is much better endowed in terms of research support than it was twenty years ago,” says VijayRaghavan. NCBS, where he still has a laboratory, was set up in 1988 and gave new impetus to the development of modern biology in India. In a partnership with the UK-based Wellcome Trust, DBT offers fellowship schemes to biomedical scientists, clinicians and public health researchers who wish to pursue academic research in India. The aim of the schemes is to provide flexible and generous funding to allow for internationally competitive science.

IndiaBioscience (IBS) is another example of an initiative created to help the life science sector get out of its niche existence. IBS functions as a catalyst organization to strengthen recruitment, networks, collaborations, research-oriented education and science communication. The initiative grew out of the annual *Young Investigator Meeting* that started in 2009. The meeting brings together India’s best young life science researchers, senior faculty, representatives of grant-funding agencies and science policy makers.

EMBO is a regular participant at the annual *Young Investigator Meeting*. The organization has contributed to the life sciences in India in many ways. A number of scientific meetings, lecture



The National Centre for Biological Sciences (NCBS), located in Bangalore, is part of the Tata Institute of Fundamental Research. It is one of the oldest research institutes in the country.

series and keynote lectures were funded by EMBO in recent years. In November 2013, an EMBO-India Young Scientists Networking meeting in Bangalore brought together thirty European and Indian young group leaders to discuss joint collaborations and funding options. Further lectures and a workshop are planned for 2014.

The opportunities for doing research are tremendous. Yet there are several challenges. "While our foundations in modern biology are good, we will slip back rapidly if we do not keep pace with the changing world," warns VijayRaghavan.

How to bring back the best brains?

According to EMBO Associate Member Inder M. Verma, professor at the Salk Institute in La Jolla, United States, India has not succeeded in attracting its diaspora as effectively as China. Chinese politicians have made it much easier for their researchers to come back. Their salaries at home are internationally competitive and they receive strong personal support.

The Indian government needs to make its top scientists feel they are in the same advantageous position as their colleagues abroad. "Scientists do not want to take a chance to go back to a system where they are afraid they will not succeed. And I do not blame them, I did not do that myself," says Professor Verma, who left India in 1967 to pursue his scientific career, first in Israel and then, in 1971, in the United States. Since 1983, he has been involved in improving the country's basic science infrastructure. He visits India regularly and was also one of the founding fathers of DBT.

The good news is that this structural problem is slowly reversing. The younger generation of scientists is especially eager to return to India. For a reason: The Wellcome Trust-DBT Indian Alliance gives up to 200,000 US dollars per year to outstanding returning scientists to help them set up their own laboratories. Other prestigious schemes include the Ramalignaswami Re-entry Fellowship also run by DBT.

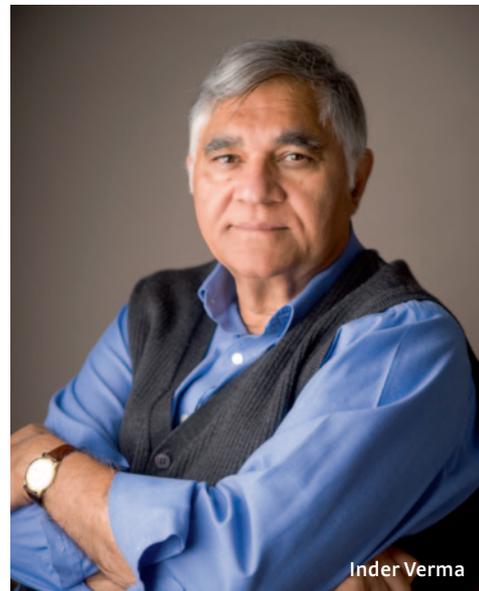


K. VijayRaghavan

A critical mass of scientific leaders

The Indian government has just announced more than twenty new research centres. Most of them are lacking scientific leadership. Large grants of up to millions of dollars are available for people who decide to take the helm. Yet there have not been many takers. The country does not have a sufficient number of science leaders who are willing to go to these new places and mentor young faculty. The Indian system of family, close colleagues and of being established in one place is difficult to break. "In the United States, people go where the best science is done. In India, family seems to be the strongest magnet," explains Verma.

A huge challenge is institutional support for scientists. Decent housing and unlimited access to the laboratory are required to keep scientists happy. There is a need for more flexible support for international travel. The flow of funds has to improve. Indian science still suffers from excessive bureaucracy. The purchasing system for supplies is full of problems created by distance,



Inder Verma

customs and duties. At every level, a small percentage of time and quality is lost. Resources *per se* are often not a problem, yet their distribution is one.

The same is true for other practicalities. India does not have proper animal facilities. There has hardly been any development of transgenic or knock-out mice – an essential component of modern biology. The country is still suffering from lack of substantial equipment, which elsewhere is taken for granted.

"These are serious problems and we are all working together to push changes. There is tremendous enthusiasm here," summarizes VijayRaghavan. "The foundation and very strong competence we have in clinical and agricultural research and in ecology can be brought to basic biology in a wonderful way. If we manage to piece all the components together, great things can happen."

"I think the government is on the right track," adds Inder Verma. "It is tremendous compared to what used to be twenty years ago. They have a reasonably good idea that basic science is still the fundamental path along which the clinical and translational research will stand. The government has realized that you need to invest a lot initially in order to have a lot of gains much later."

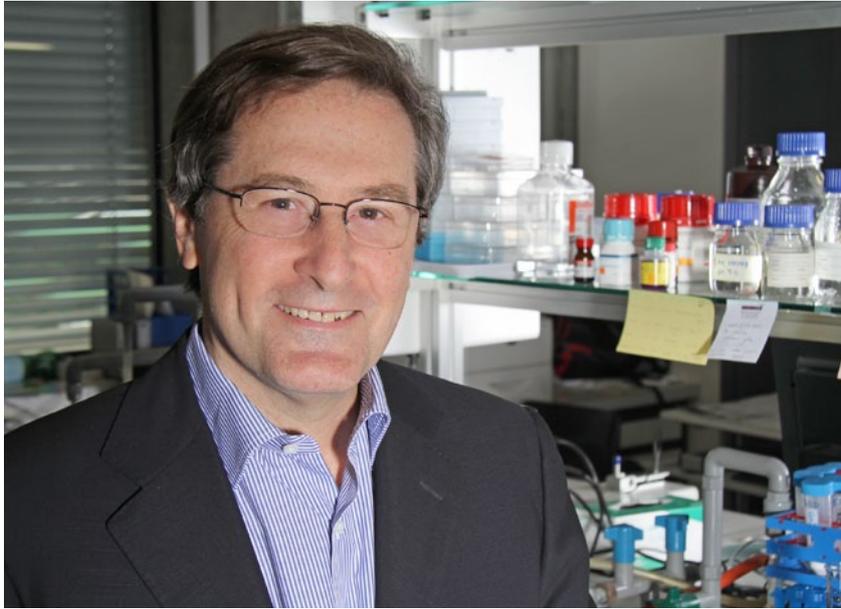
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1. Source: J. Chakma et al. (2014) *New England Journal of Medicine* 370: 3–6 doi: 10.1056/NEJMp1311068

A passage to India: A group of EMBO Members and EMBO managers visited India in January 2011. The delegation attended the Indian Science Congress in Chennai, where Tim Hunt gave a lecture, and then toured nine academic institutes across India. The visit marked the beginning of EMBO Global Activities in India with the goal to connect researchers from both continents. Left to right: Anne-Marie Glynn, Vivek Malhotra, Maria Leptin, Tim Hunt, MRS Rao, Anuranjan Anand, AN Jayachandra.



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Breakthrough research

MICHAEL N. HALL, Professor of Biochemistry at the Biozentrum of the University of Basel, is one of the winners of the 2014 Breakthrough Prize in Life Sciences. He received the prize for his discovery of the protein kinase target of rapamycin (TOR) and its role in cell growth control. In the same week in December, Hall's laboratory was announced as a co-recipient of an 11.2 million Euros Synergy Grant from the European Research Council (ERC). In an interview with *EMBOencounters*, Hall recalls the award ceremony in California and the highlights of 2013.

What were the factors that made 2013 such a success?

The support from the ERC came after several years of applying to different agencies. We submitted the project a number of times before finally succeeding. We learned from our failures. For example, initially we underestimated the importance of pathology. By the time the successful application rolled around, we had proof of concept. It also took time to recruit patients with hepatocellular carcinoma for the study. With regard to the prize, I suppose the story had matured to a point where the significance of the original discovery was clear.

What makes the TOR protein so special? It has kept your research going for more than two decades.

TOR is a highly conserved protein that controls the fundamentally important processes of growth and aging. It is found in all eukaryotes – all the way from yeast to humans, including flies, plants and worms. TOR is a validated drug target, implicated in several diseases such as diabetes, cardiovascular disease and cancer. As a result, several communities are interested in TOR – the pharmaceutical industry, clinical researchers and basic scientists. The positive side is that we have an immediate audience for whatever we do. The downside is that it is extremely competitive.

You mentioned that the protein offers a promising target for a wide range of diseases.

Which one would you like to focus on in the future?

For us it is clearly cancer. We do some research that relates to obesity and diabetes, but the main focus is going to be liver cancer. This is the focus of the 11 million Euro Synergy grant that Niko Beerenwinkel, Gerhard Christofori, Markus Heim and I just received.

How will the Synergy Grant change your research and your set-up?

It will help me expand my basic research into translational research areas and increase my team by a few people. Our laboratory received the grant together with colleagues in the Department of Biomedicine of the University of Basel and the Department of Biosystems Science and Engineering at the ETH Zurich to explore how tumours become resistant to targeted therapies. It is a translational project that takes us into the operating room. In fact, I have visited the operating room to see how the tumour samples are collected. This helped me to understand that there are people behind our research – something I knew of course but did not fully appreciate. It makes a huge difference for someone who started out as a yeast geneticist.

The project takes my laboratory in a direction it has been going for a few years. We want to ramp it up now. In the eighties and nineties, my laboratory focused on yeast genetics but we have now moved on to mammalian cells. More recently we started working on mice to better understand the process of cell growth in the context of whole body growth. To find out what happens when this process is not functioning properly, we decided to start working on human tumours. It is a logical conclusion to how my laboratory has been evolving since the eighties.

Were you surprised to hear that your past discovery earned you the Breakthrough Prize?

I was very surprised. In fact, it took me a while to believe it.

A declared goal of the prize is “to celebrate scientists and generate excitement about the pursuit of science as a career”. Do you believe this will happen?

The prize certainly celebrates scientists as individuals. At least I and the other laureates felt very celebrated. I am sceptical that the prize itself is going to encourage a young person to go into science. You do not go into science to win prizes. But, hopefully the prize will generate excitement about science, which will then lead young people to pursue a scientific career. We need more people and funding in science. There are many problems that still need to be solved, for example, cancer and climate change. Who will solve these problems if not scientists? Who will make the next technological breakthrough that will lead to something as important and useful as the internet?

What was the award ceremony like?

The gala was a unique experience. It was a glitzy Oscar-type ceremony at NASA's Ames Research Center in California that brought together very different types of people. A genuine mix of Hollywood celebrities, Silicon Valley bigshots and scientists. Movie stars and scientists do not often have the chance to mix. Yet everybody seemed to enjoy each other's company and have a good time.

How are you going to use the money?

I am not exactly sure yet, but I probably will not use it for my research. However, I would like to give back to science, most likely by helping young scientists.

You were born in Puerto Rico, grew up in South America and have lived in Switzerland for almost thirty years. Are you planning to move continents again?

I feel very lucky that I ended up in Basel, and in particular at the Biozentrum. It is a scientific paradise. And I am still happy here and do not plan to move. In addition to my American citizenship I am a Swiss citizen now. I could however go back to the United States once I retire as my mandatory retirement approaches here. I like being a scientist and I do not see myself stopping, at least not yet.

From targeted to multitargeted cancer treatments

EMBO Member Alexander Levitzki, Professor of Biochemistry at the Hebrew University of Jerusalem, Israel, pioneered the generation of tyrosine phosphorylation inhibitors (tyrphostins) in the late 1980s to the mid-1990s. Work in his group focused on the development of “tyrphostins”, or “tyrosine kinase inhibitors” (TKI), directed against epidermal growth factor receptor (EGFR), Her-2, Bcr-Abl, Jak-2, vascular endothelial growth factor receptor 2 and platelet-derived growth factor receptor. These findings led to the development of 15 tyrosine kinase inhibitors that are currently used in cancer therapy. Dramatic effects have been achieved in the treatment of early chronic myelogenous leukemia with Gleevec. Nevertheless, despite the increasing use of tyrosine kinase inhibitors in the clinic, their performance has been modest against solid tumours.

Most targeted therapies are aimed at one critical oncogenic marker, so it is easy for tumours to develop resistance, especially as tumours are constantly evolving. “We sought strategies that would hit tumours at many targets, since malignant tumours exhibit ever-changing heterogeneity,” says Levitzki. “We began with tumours that overexpress EGFR, which is currently targeted in the clinic by the tyrosine kinase inhibitors Gefitinib, Erlotinib, Lapatinib and by two antibodies, Cetuximab and Panitumumab. These targeted agents exhibit weak efficacies against tumours that overexpress EGFR.” In these tumours, although EGFR is overexpressed, it apparently is not an essential survival factor. Therefore, in the clinic, only a small subset of EGFR-overexpressing tumours responds to EGFR inhibition, and these tumours often acquire resistance rapidly.

“We have converted the overexpression of EGFR, rather than its activity, into the Achilles heel of the tumour,” says Levitzki. This was achieved by using the EGFR as an entry point into the tumour. Levitzki’s group uses an EGFR-targeting vector to specifically deliver synthetic double-stranded RNA, PolyInosine-PolyCytosine (PolyIC), into tumours that overexpress the EGFR.

This results in tumour-specific internalization of large amounts of PolyIC. The internalized PolyIC activates several signaling pathways, including protein kinase R and other double-stranded RNA-dependent factors, leading to cell death. In addition, PolyIC induces a “bystander effect,” due to the production of interferon-alpha, interferon-beta and cytokines that recruit immune cells, such as NK and T cells. These immune cells attack all of the tumour cells, including cells that do not overexpress EGFR (Figure 1). Thus, the internalized PolyIC induces the rapid demise of the targeted cell as well as neighboring tumour cells, but spares the more robust non-tumour cells. Indeed, this vector led to the complete regression of disseminated EGFR-overexpressing tumours in mice (1). “This new strategy tackles an important deficiency of targeted therapy, namely its inability to contend with the heterogeneity of malignant tumours,” says Levitzki.

The vector for delivery of PolyIC consists of polyethyleneimine-polyethyleneglycol-ligand, where the ligand can be epidermal growth factor, as in the initial experiments, or any other suitable ligand. “In our most recent studies, we have replaced the homing epidermal growth factor moiety by a ligand that zeros in on Her-2, destroying Her-2 overexpressing breast cancer cells (2), even ones that are resistant to Trastuzumab (Herceptin).” Similar vectors have been generated to target metastatic prostate cancer using a vector targeting prostate surface membrane antigen (PSMA), and metastatic melanoma using a vector targeting protease activated receptor 1 (Par1).

Another approach to enhance targeted therapy was discovered by serendipity. “We began looking for insulin-like growth factor 1 receptor kinase

inhibitors in 1997. After developing a number of generations of such inhibitors, we came across a family of tyrphostins that act as allosteric kinase inhibitors of these receptors,” says Levitzki. An unexpected property of this particular family of novel tyrphostins, which include NT157, was the ability to induce the irreversible proteolytic destruction of Irs1 and Irs2, the signal transducers of insulin-like growth factor 1 receptor. This results in dramatic anti-tumour effects in experimental animals harboring prostate cancer, ovarian cancer or metastatic melanoma (3). Recently, B-Raf inhibitors have been hailed as effective therapy against metastatic melanoma, but resistance develops rapidly. NT157 is effective even against tumours that carry B-Raf activating mutations that are resistant to Vemurafenib (Zelboraf). “Our laboratory is currently developing strategies to induce the irreversible destruction of other signaling molecules, such as mutated K-Ras,” adds Levitzki. The focus of Levitzki’s laboratory is finding ways to target specific tumour markers, while invoking a holistic anti-tumour response.

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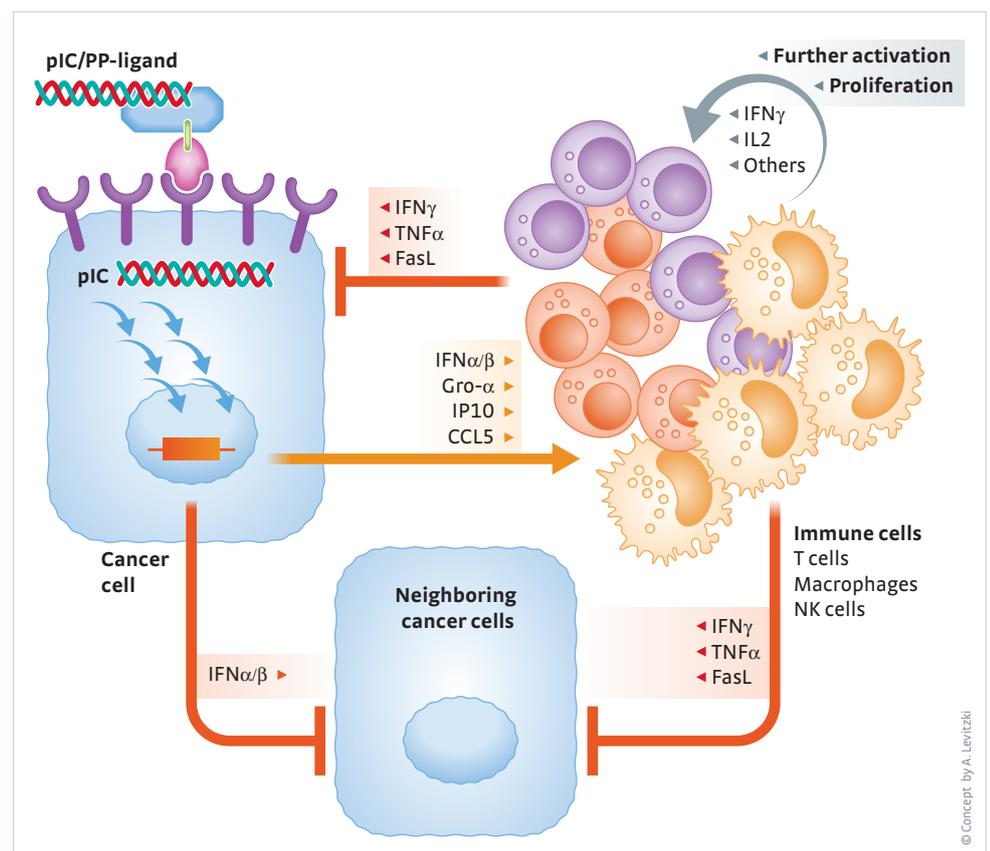


Fig. 1 | The multitargeting of long chain dsRNA

Upon internalization of long chain dsRNA a number of signaling proteins are activated: dsRNA dependent protein kinase, PKR, TLR-3, RIG-1 and MDA-5, leading to the inhibition of protein translation, activation of caspase-3, the secretion of type-I interferons and pro-inflammatory cytokines. These events acting in concert, lead to the demise of the targeted tumor cell but also of its neighboring tumor cells, saving the more robust neighboring normal cells.

MEET THE SCIENTIST

EMBO Young Investigators & Installation Grantees



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Ido Amit

2013 EMBO Young Investigator | Weizmann Institute of Science in Rehovot, Israel

My career. Growing up in an Israeli kibbutz affected my thinking. The surrounding diversity of biological processes started to fascinate me early on. As a PhD student, I took on research in growth factor receptors, specifically those involved in cancer. At that time, systems biology took off at Weizmann. I started to integrate classical biochemistry and the physiological understanding of tumours into the new approach that came from physics. It was exactly what I dreamed of: using an engineering approach to understand how systems and networks work.

I was very fortunate to work with leaders in growth factor signalling such as Yosef Yarden and systems biology pioneers such as Uri Alon who came to Weizmann at that time. For me, this really was an eye-opener.

In 2007, I moved on to do postdoctoral research at the Broad Institute in the United States. This centre was leading in high-throughput biology and genomic infrastructure to measure functional genomics. I tried to move away from cancer, which is a very complex problem because of its huge heterogeneity and genome instability. I stayed in Massachusetts for four years and then came back to the Weizmann Institute.

I never had any doubts about my scientific career. From day one I had a clear idea about how to tie biology into a bigger, systemic field.

Recent research. Our lab studies how chromatin regulation and transcription factor networks affect haematopoiesis and immune responses. We want to understand the principles of the genome regulatory sequence and how it functions to shape development and homeostasis in our body, in both normal physiology and disease. Whilst all cells in our body have the same genome, different cells in our body have different functions. Understanding the regulatory sequences in the genome and how they are activated during development is an open and critical question we are very excited about.

Networking. Each laboratory is like an island. Only if we connect these islands by networking or interdisciplinary work, will we be able to boost our research.

We are running into problems on a weekly and sometimes even daily basis. Being part of the EMBO network makes you feel like you are not alone.

What drives me. I think the most important thing is to enjoy and believe in what you are doing. There is a lot of hardship along the way but if you work with passion it becomes contagious and eventually you and your team can overcome these stumbling blocks and get to where you want to be.



©University of Warsaw

Joanna Sulkowska

2013 EMBO Installation Grantee | University of Warsaw, Poland

Key career experience. Two important steps determined my scientific career. The first one was a masters project at the VU University Amsterdam in the group of Christoph F. Schmidt. It was amazing to be part of this group, to listen to their endless discussions and arguments about science and to perform experiments. My time there convinced me to become a scientist.

Another one was my postdoctoral experience at the University of California, San Diego, in the group of José Onuchic. This was a perfect environment to learn how important it is to look at a problem from many perspectives such as theoretical physics, mathematics or biology.

Since that time, knotted proteins have been in the center of my scientific interest. I started to work on them six years ago and they keep surprising me. They are very special and cannot be directly compared to other proteins, knotted DNA or polymers. I like working on things that challenge me all the time.

Coming back to Poland. When leaving Poland in 2008, I did not see many young group leaders around me. Poland always had some amazing scientists who inspired me, however not too many new laboratories. Therefore I was not sure if I could establish my independent group and be accepted by the community. However, my uncertainty was not necessary.

I found Poland very open for young scientists returning from abroad. The Polish Foundation of Science strongly supports young scientists with training and grants. I learned how to make a science business plan and how to apply for bigger grants to establish my independent group.

Recent research. My research concentrates on the free energy landscape of proteins from the perspective of folding and mechanical unfolding. Recently, I have been using physical, chemical and mathematical methods to understand new types of protein topology, which involves knots. It is not yet understood what is the function of knots in proteins. In the past, my research focused on how knotted globular proteins can fold. Now I would like to concentrate on their functions and also explore them experimentally. Knotted proteins are involved in diseases such as Parkinson's or AIDS.

EMBO Installation Grant. I will use the funds from EMBO to hire students, buy computers, and for collaboration with experimental laboratories. I would like to learn how to perform experiments in my own laboratory in the future. So far, knotted topology could only be detected in computer simulations, however my goal is to design experimental techniques, which will enable to detect knots *in vitro*.

MEET THE SCIENTIST

EMBO Young Investigators & Installation Grantees



©University of Groningen

Jan-Willem Veening

2013 EMBO Young Investigator | University of Groningen, Netherlands

Recent research. In 2009, I established my own research and teaching group in the Groningen Biomolecular Sciences and Biotechnology Institute at the University of Groningen. My laboratory studies chromosome segregation, mechanisms of antibiotic tolerance, and noise in gene expression in *Streptococcus pneumoniae*.

Streptococcus pneumoniae is one of the main human pathogens killing nearly one million children each year. My lab uses molecular genetics and single cell analysis to study fundamental aspects of its biology such as cell division and chromosome segregation. Another goal is to find out why and how it switches from a commensal to a pathogen.

Changing directions. I was originally trained to work with the model bacterium *Bacillus subtilis*. I continued working with *Bacillus* during my postdoctoral research, but I was always interested in *Streptococcus pneumoniae*, since this is the organism that was instrumental in showing that DNA is the carrier of genetic information. This little organism set the stage for modern molecular genetics. At the Centre for Bacterial Cell Biology (CBCB) I got the opportunity to set-up the first cell biological tools for *S. pneumoniae* and now my whole research is focused on this amazing bacterium.

Turning point in my career. My postdoctoral research at the Centre for Bacterial Cell Biology (CBCB) in Newcastle was certainly a major turning point. Coming from a teaching oriented university where most of the research is performed by master and graduate students to an institute mainly run by top post-docs striving for big papers was really stimulating. Now I try to combine the best of both worlds: excellent research with excellent students.

Becoming a group leader. The biggest challenge for me as a group leader was to adjust to the fact that I am not doing the experiments myself anymore. I had to learn to give the responsibility to my students and postdoctoral researchers. Now it is my favourite part of the job – to discuss results and help thinking about the experiments.

Selection as EMBO Young Investigator. To be part of a network with some of the best scientists in Europe is fantastic and will open new doors for collaborations and funding possibilities. The recognition and exposure might also motivate new students and post-docs to join my team. Also, the extra funding and access to EMBO and EMBL courses and facilities will be very useful.



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Raquel Oliveira

2013 EMBO Young Investigator | Gulbenkian Institute of Science, Portugal

Turning point in my career. Deciding to move to the University of Oxford and to work in Kim Nasmyth's laboratory. For my PhD degree I worked on *Drosophila* and very much focused on mitosis and chromosome organization. So my plan was to go to a hard-core *Drosophila* lab. I continued research on fruit fly during my postdoctoral research. However the focus of Kim's laboratory is yeast.

It was a privilege to be part of Kim's team. The set-up in his laboratory was different than in other places. Usually, people have different biological questions and use the same kind of techniques in model organisms. In his laboratory, almost everyone is focussed on the problem of sister chromatid cohesion, but they look at it from different angles, using completely different approaches.

Influence as group leader. In Oxford, I was constantly confronted with many different types of research: From hard-core biochemistry to cell biology and organism-related questions. It was a big learning period.

My time spent there hugely shaped the way I developed my scientific approach. Kim is well known for having a question-based approach and for developing new methods to do the best-controlled experiments in the cleanest way possible. This is something I inherited from him.

Challenges in setting up my own group. The biggest one is to attract very good postdocs. Usually, young group leaders are quite attractive for PhD students, who like the advantage of a small group. But postdocs are frequently looking for more established laboratories. Another one is to adapt to a new working-style. Combining the paperwork and grant writing with working at the bench is not easy. At the moment I spend less than half of my time at the bench and I need to change this.

Advice to new group leaders. To thoroughly think about what is the main question you want to pursue in your own lab and what are your unique selling points. Having a clear idea about these things is very important for writing grants, applying for jobs and for additional funds. Another piece of advice would be to gain more experience in guiding other people during your postdoctoral research. Also to learn how to write grants. It boosts your confidence when you master these skills from the beginning.

EMBO Press launches

More than 230 guests attended the launch of EMBO Press held concurrently with the American Society of Cell Biology meeting on 15 December 2013. The event took place at the Audubon Aquarium of the Americas overlooking the Mississippi.

We are proud to announce EMBO Press to such a wonderful crowd of people,” said Bernd Pulverer, Head of Scientific Publications at EMBO, speaking at the launch event. “EMBO Press affords us the independence to lead in implementing innovations to ensure that journals continue to aid scientists and to encourage scientific research. The striking new designs of the four scientific journals on the platform, with new functionality and forward-looking policies, should speak for themselves,” he added. “EMBO Press is founded on the themes of transparency and accountability of the editorial process and on innovation to allow us to publish high quality research in a way that is more accessible and useful. We hope to contribute to a reliable, quality literature and to encourage others to share in this vision.”

EMBO Press went public online early in the New Year. The new publishing platform delivers enhanced functionality, an innovative design, as well as constructive editorial policies, processes and quality standards across the four EMBO publications.

“It is one of our goals to add maximal value to published research through the optimized presentation of research data and to provide a more flexible and customizable interface to allow the reader to drill down as deep into a paper as they see fit,” added Pulverer. “It is our aim to transform the research paper from a

written record of a research project with illustrations to a fully fledged research tool without losing sight of accessibility to our broad readership. The four EMBO Press journals will achieve wider global reach through collaboration with our publishing partners HighWire Press and Wiley.”

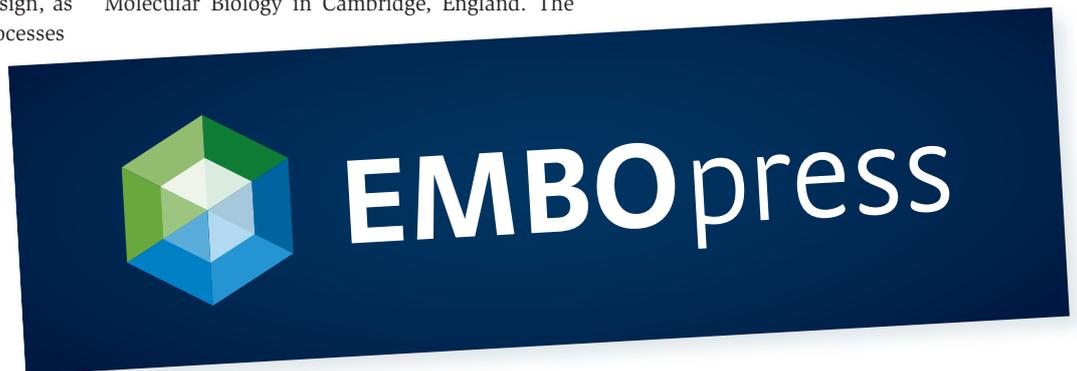
Also at the American Society of Cell Biology, EMBO Director Maria Leptin chaired a panel discussion focused on whether peer review is under threat. The panel included contributions from Bruce Alberts, Professor Emeritus in the Department of Biochemistry and Biophysics at the University of California, San Francisco, Anthony Hyman, Research Group Leader and Director at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, Germany, Jon Lorsch, Director of the National Institute of General Medical Sciences, Emilie Marcus, Chief Executive Officer of Cell Press, and Melina Schuh, Group Leader at the MRC Laboratory of Molecular Biology in Cambridge, England. The

speakers addressed concerns about peer review and research assessment from the perspective of funders, institutions, journals, and scientists.

Bernd Pulverer also took part in a panel discussion on DORA, the San Francisco Declaration on Research Assessment, which has attracted more than 10,500 signatures, including 437 organizations, across all the sciences. The declaration highlights the problem of using journal-based metrics as a proxy for quality in the assessment of individual scientists, highlighting that all the stakeholders – journals, funders, research institutions and, importantly, researchers – have to work together to bring about change.

More than 5000 people attended the American Society of Cell Biology meeting from 50 countries.

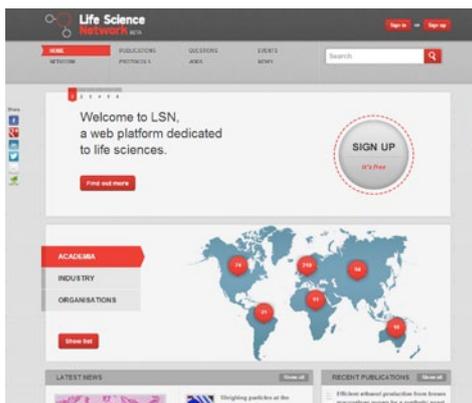
The new EMBO Press platform is online at embopress.org



Life Science Network

Three EMBL alumni have launched an interactive science portal. The Life Science Network (www.lifescience.net) is an internet platform for professional networking and sharing knowledge in the life sciences.

www.lifescience.net



Our offering is a web platform designed to bring together the life science community and stimulate a culture of sharing and openness,” says Alen Piljic, one of the original founders of the non-profit organization behind the project. “We saw the need for a new service that would be both informative and useful for the everyday activities of scientists.”

What started as an extensive directory of life science infrastructure, including universities, institutes and companies, and their internal organizational structures, now includes six different modules integrated into a single web application.

“Each module was developed to address a particular problem. For instance, the publications module includes post-publication review features. The jobs module allows you to post a job opening, receive applications and directly evaluate them, making the recruitment process more efficient,” says Piljic. “If you have no scientific protocols to

share, maybe you want to promote an event, or tackle an elusive question. There is something for everyone.”

So far, more than 400 institutions and companies are listed in the network and over 2000 scientists have signed up for an account. “We look forward to welcoming new members and the content they contribute. The Life Science Network is a community-driven project. Should it generate profits, those funds will be used to support our members and their research,” concludes Piljic.

EMBO has made available information on its upcoming Courses & Workshops for the portal.

Aleksander Benjak and Vibor Laketa are cofounders of the Life Science Network. The Google Grants programme for non-profit organizations has provided support for the project.

All inquiries related to the Life Science Network initiative should be sent to: alen@lifescience.net

Seeds to sow in a slow economy

A group of researchers, including EMBO Members Kenneth Timmis and Victor de Lorenzo, recently put forward a proposal to revive innovation-based economies in Southern European countries. The plan centres on the discovery and exploitation of new chemicals obtained from the biological diversity of countries in the region.

The global economy of Europe has suffered in recent years, in particular in countries in Southern Europe. The problems may well be long lasting due to catastrophic constraints on employment, especially for younger qualified people. In a recent paper in *Environmental Microbiology*, Kenneth Timmis and colleagues argue for the creation of transnational partnerships that would foster the discovery and synthesis of new chemicals for medicines, agrochemicals, materials and other products and applications.

“Europe has incredible unused resources for new biological diversity that could be used as a starting point for the discovery and development of new chemicals. Much of this natural wealth resides in the countries of Southern Europe and, if correctly used, could generate significant economic returns,” says Timmis, Professor at the Institute of Microbiology, Technical University of Braunschweig, in Germany. “What is needed

is an initial investment that would in time bring bigger returns in employment and social and economic prosperity.”

The proposed network would rely principally upon existing academic research and infrastructure but would also require the creation of new core centres and national networks of laboratories. The core centres would be self sufficient and charged with initial proof of concept studies as well as potential technology transfer as ideas reach maturation. The proposal described in the paper calls for a Euro 120 million investment over the course of ten years to support infrastructure, staff and equipment.

“A key feature of the Pipelines for New Chemicals Initiative is to create networks of cell and molecular biologists to convert new discoveries in cell biology into new screens for agonists-antagonists, without diverting people from their primary research objectives. The Pipelines for New Chemicals Initiative would bring together

industry and academic partners on a wide range of projects and create a pathway to new industries with employment opportunities for talented young scientists,” says Timmis. “I urge like-minded EMBO Members, particularly those of Southern Europe, to bring the initiative to the attention of influential national and European stakeholders whom they know.”

Pipelines for New Chemicals: a strategy to create new value chains and stimulate innovation-based economic revival in Southern European countries.

Kenneth Timmis, Victor de Lorenzo, Willy Verstraete et al. (2013)

Environmental Microbiology **16**(1), 9–18
doi: 10.1111/1462-2920.12337



Kenneth Timmis

BOOK REVIEW

Brave Genius

Sean B. Carroll has published a new popular science book entitled *Brave Genius*. The book, which describes the little known friendship between the scientist Jacques Monod and philosopher Albert Camus, chronicles the bravery of both men during the occupation of France in the Second World War, their opposition to Stalin and communism, and traces their different paths towards their respective Nobel Prizes.

Carroll's book is the unexpected story of the personal relationship between French philosopher Albert Camus and Jacques Monod, a friendship that developed over a 12-year period after the end of the Second World War. The relationship was built on a deep mutual respect for science and philosophy and the need to formulate and express a clear moral direction at a highly unsettled time in world history.

“I am a lifetime Second World War buff, and once a serious student of French literature,” says Carroll, an internationally known scientist and educator who heads the Department of Science Education at the Howard Hughes Medical Institute. “That, and my instant attraction to Monod and Jacob's pioneering work on bacterial gene regulation, was the accidental preparation for researching and writing this book,” he explained.

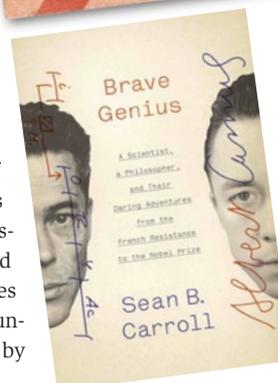
“This book was an extraordinary adventure for me, as I was given all sorts of previously unknown and unpublished materials by many people who were close to Monod. That trust allowed me to tell the story of two remarkable individuals, who each in their own way shaped the course of modern literature and science,” says Carroll.

Brave Genius takes the reader on a journey from the early days of the Second World War, through the development of their friendship in post-war Paris, to the announcements of their Nobel Prize-winning achievements. “Both men were exquisite writers and it was fascinating to explore what drew Monod and Camus together,” says Carroll.

The book unearths some of the extraordinary risks both men took to protect their home country from the ravages of an occupying army, Monod as an officer in the French Resistance and Camus as the editor of a leading underground newspaper. Carroll's book also includes a description of the repressive years in Russian-occupied Hungary and includes an account from EMBO Member Agnes Ullmann about her escape from her home country, an initiative that was directly orchestrated by Monod and others.

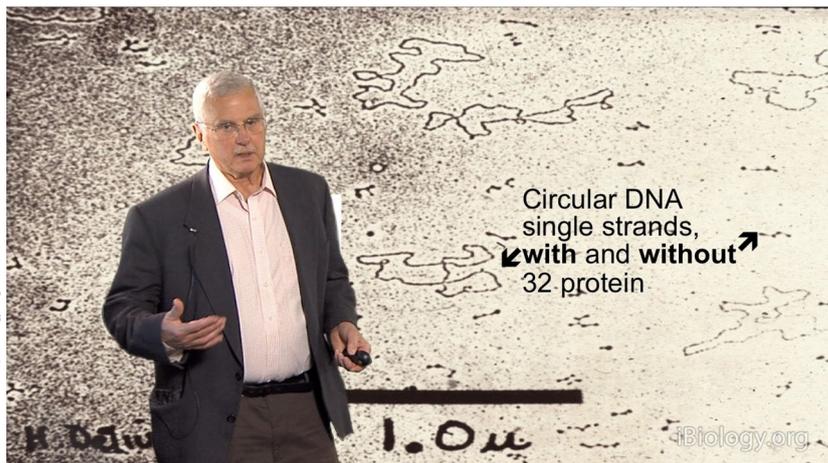


Top: Jacques Monod's identity card for the French Forces of the Interior, in his *nom de guerre* “Malivert” (Courtesy of Sean Carroll and Olivier Monod).



Left: Book cover

Teaching biology in a digital world



iBiology.org is a new website featuring free, open-access videos by world-renowned scientists describing their work or sharing personal stories.

In the video series, some of the world's leading life scientists describe their ongoing research. Intended audiences include undergraduates, graduate students, postdoctoral fellows, and teachers who have access to a useful tool to learn about a specific subject and to find out how leading scientists go about their research. Topics range from cell biology to neuroscience and human health. Currently more than 140 of the talks have English subtitles and more than 40 have Spanish subtitles. The goal of iBiology.org is to develop partnerships with graduate students, postdoctoral fellows and educators around the world and to disseminate materials to them to make science accessible to all.

Originally launched as iBioSeminars in 2007 (see also *EMBOencounters* issue 17), the videos include full-length scientific seminars by scientists such as Max Planck Institute's Anthony Hyman, Alfred Wittinghofer or Kai Simons. A companion series called iBioMagazine offers short talks on topics such as the importance of learning from failure by former *Science Magazine* Editor-in-Chief Bruce Alberts, on how to give a good talk by Stanford scientist Susan McConnell, or the process of developing animations for cell biology by Janet Iwasa.



Bruce Alberts (left), former Editor-in-Chief of *Science Magazine*, and 2013 Nobel Laureate Randy Scheckman giving lectures in the video room

Relaunched in October 2013, the site now features new content under the iBioEducation section. Educators can also choose from a library of hundreds of short videos to use in their courses. It offers microscopy course materials including lectures on High Throughput Microscopy by EMBL scientist Jan Ellenberg or topics like cellular membranes by Nobel Laureate Randy Schekman.

The section Famous Discoveries introduces students to the primary scientific literature. These videos feature scientists giving personal accounts of their own discoveries. Nobel Laureate Elizabeth Blackburn discusses telomerase and Martin Chalfie talks about his discovery of green fluorescent protein.

Since November 2013, iBiology has organized several live Question and Answer (Q&A)

webinars with famous scientists. Recently, Bruce Alberts answered questions from the audience about the Future Challenges for Science and Science Education. In March, Keith Yamamoto will continue the discussion on the biomedical workforce, including the future of postdoctoral training, which was started by Gregory Petsko in December. To find out more about iBiology's live Q&A events, visit: ibiology.org/hangout-with-a-scientist.html.

For more information, contact Laurence Clement at lclement@ascb.org



Translating Diabetes

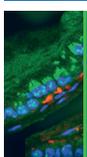
ORGANISERS J. Brüning, S. Herzig, M. Tschöp

30 April–3 May 2014

Tumour Microenvironment and Signalling

ORGANISERS A. J. Berns, P. P. Pandolfi, B. Pauly

7–10 May 2014



Molecular Machines

Lessons from Integrating Structure, Biophysics and Chemistry

ORGANISERS T. Carlomagno, J. Chin, J. Puglisi

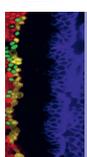
18–21 May 2014

Epithelia

The Building Blocks of Multicellularity

ORGANISERS H. Clevers, E. Fuchs

27–30 August 2014



The Complex Life of mRNA

ORGANISERS A. Ephrussi, N. Sonenberg, J. A. Steitz, D. Tollervey

5–8 October 2014

Frontiers in Metabolism

From Molecular Physiology to Systems Medicine

ORGANISERS J. Auwerx, S. Dimmeler, T. Lemberger, V. Mootha

17–20 November 2014



EMBO Science Policy

Established in 2011, Science Policy is the most recent programme at EMBO. Its goal is to provide informed analyses to policymakers and other policy leaders, research administrators and scientists for use in their decision-making processes.

Bioethics, research integrity, and scientific publishing are the most important issues on the agenda. “We deal with topics that are important to the EMBO membership,” says programme manager Michele Garfinkel. The focus is on the governance of new technologies for advancing science and what the implications of these are for scientists and for the public. Garfinkel works with the assistance of Sandra Bendiscioli, who previously contributed to the EMBO Science & Society Programme. “Our task is to identify the gaps in science and policy with respect to the development and use of new technologies, and to provide informed analyses as to how to fill those gaps.”

Identifying experts, organising workshops, providing reports – this is a typical sequence of work. “We are very analytical in our approach,” says Garfinkel. As simple solutions to complex problems are rare, the programme operates on a longer timescale involving requests for opinions from the EMBO community, and the evaluation of a wide spectrum of inputs. “I am a policy geek,” adds Garfinkel who prior to joining EMBO worked as policy analyst at the J Craig Venter Institute in Maryland, United States.

The topics are diverse. National and European policy processes concerning the environmental release of synthesized microorganisms were in focus at a workshop held in Heidelberg in November 2012. Scientists, sociologists and policy practitioners including a representative from the European Commission attended the workshop. Its results were summarised in the report *Biological containment of synthetic microorganisms* (www.embo.org/science-policy/reports-publications).



Working hand in hand: Sandra Bendiscioli (left); programme manager Michele Garfinkel (right)

Recently, Garfinkel and Bendiscioli received a second grant from the European Science Foundation to conduct a case study on *Personal identifiable human genome sequencing in research*.

The interdisciplinary group will evaluate the current situation and explore scientific and policy options for the distribution of metadata along with the genetic data, and possible consequences.

Jointly with Gerlind Wallon, manager of the Women in Science activities, the programme has also received a grant from the Robert Bosch Foundation for a project called Exploring Quotas. Its goal is to produce a series of options for policymakers who are considering the use of gender quotas. A closed workshop in May 2014 will help work out the benefits and problems arising from the use of such quotas.

EMBO was one of the few European organizations involved in the development of an online training course on research integrity. The tool is available to the entire EMBO community, its Members, Fellows and Young Investigators.

Part of Garfinkel's current role is frequent travel to present the prepared reports, participate in European policy making processes and give talks. She was a speaker at the 3rd World Conference on Research Integrity in Montreal, Canada, last year. In Brussels she frequently attends meetings of committees and science policy groups. In this setting she learns about the views of European political and policy bodies and provides them with information and knowledge generated by the EMBO community and the Policy Programme.

“Our success in applying for grants and acceptance within the European policy community is recognition for our approaches to policy problems and the high quality of our work,” says Garfinkel. A personal award followed recently: For her work on the societal impact of molecular biology, synthetic biology and human genomics, Garfinkel was elected a AAAS Fellow in 2013.

www.embo.org/science-policy

Upcoming deadlines

EMBO Courses and Workshops
1 March

EMBO | EMBL Symposia
1 March

EMBO Keynote Lectures
1 March | 1 June

EMBO Young Investigators
1 April

EMBO Installation Grantees
15 April

**FEBS | EMBO
2014 CONFERENCE:**
.....
Application deadline for bursaries
7 April

Abstracts submission closing
1 May

End of early registrations
12 May

Editorial

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Web version
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E-newsletter
Sandra Krahl, Katja Linssen

Next issue

EMBOencounters

The next *EMBOencounters* issue – **Summer 2014** – will be dispatched in **July 2014**.

Please send your suggestions, contributions and news, to communications@embo.org by **12 May 2014**.

Practical Courses

Advanced optical microscopy
UK-Plymouth, 2–12 April

Computational biology: Genomes to systems

CL-Puerto Varas, 3–9 April

Computational structural biology

UK-Hinxton, 7–11 April

Computational molecular evolution

GR-Heraklion, 5–14 May

Bioinformatics and genomes analyses

GR-Athens, 5–17 May

The structural characterization of macromolecular complexes

FR-Grenoble, 2–7 June

Non-coding RNAs: From discovery to function

IE-Galway, 7–13 June

Molecular genetics with fission yeast

FR-Paris, 30 June–11 July

3D Developmental imaging

PT-Oeiras, 4–12 July

Correlative light electron microscopy

UK-Bristol, 6–11 July

Solution and solid-state NMR of paramagnetic molecules

IT-Sesto Fiorentino, 13–19 July

Biomolecular simulation

FR-Paris, 20–27 July

Genotype to phenotype mapping of complex traits

UK-Hinxton, 28 July–1 August

Multidimensional NMR in structural biology

DE-Joachimsthal, 10–15 August

Light sheet microscopy

DE-Dresden, 18–29 August

Cryo-electron microscopy and 3D image processing

DE-Heidelberg, 31 August–9 September

Ubiquitin and related modifiers

IT-Alghero, 6–13 September

Protein expression, purification, and characterization (PEPC9)

DE-Hamburg, 8–16 September

Microscopy, modelling and biophysical methods

DE-Heidelberg, 8–20 September

Single-cell gene expression analysis

DE-Heidelberg, 19–25 September

Targeted proteomics: Experimental design and data analysis

ES-Barcelona, 28 September–3 October

Non-coding RNA in infection

DE-Würzburg, 12–18 October

Analysis of high-throughput sequencing data

UK-Hinxton, 20–25 October

High-throughput microscopy for systems biology

DE-Heidelberg, 20–26 October

Solution scattering from biological macromolecules

DE-Hamburg, 27 October–3 November

Biomolecular interaction analysis: From molecules to cells

PT-Porto, 24–28 November

Workshops

Stalked alpha-Proteobacteria and relatives: From genes to structure
DE-Ebsdorfergrund, 30 March–3 April

Recoding: Reprogramming genetic decoding

IE-Killarney, 13–18 May

Glycobiology and glycochemistry: Applications to human health and disease

PT-Lisbon, 24–28 May

Magnetic resonance for cellular structural biology

IT-Principina Terra (Grosseto), 1–6 June

Histone variants

FR-Strasbourg, 2–4 June

Cellular imaging of lipids

IT-Vico Equense, 2–6 June

Simultaneous profiling of RNA and protein using proximity ligation assay
UK-Chelmsford, 7 July

Intercellular communication in plant development and disease

FR-Bischoffsheim, 24–29 August

The regulation of aging and proteostasis

IL-Ma'ale Hachamisha, 7–12 September

Advances in protein–protein interaction analysis and modulation

FR-Hyères, 9–12 September

Current advances in membrane trafficking: Implications for polarity and diseases

CL-Puerto Natales, 9–14 September

Unraveling biological secrets by single-cell expression profiling

DE-Heidelberg, 25–26 September

Decoding neural circuit structure and function

TR-Istanbul, 26–28 September

Development and regeneration of the spinal cord

ES-Sitges, 1–4 October

Cancer stem cells 20 years later: Achievements, controversies, emerging concepts and technologies

IT-Catanzaro, 3–6 October

Human RNA viruses

TR-Istanbul, 6–8 October 2014

Wnt signalling: Stem cells, development and disease

AU-Broome, 6–9 October 2014

Translational advances in cancer cell signalling and metabolism

ES-Bilbao, 7–9 October 2014

Non-coding RNAs in genome expression, maintenance and stability

FR-Cargèse (Corsica), 7–10 October

Cell plasticity and nuclear dynamics

SG-Singapore, 12–15 October

Epigenetic plasticity: Implications in neural (dys)function

PT-Braga, 22–25 October 2014

Stem cells and epigenetics in cancer

CN-Hong Kong, 16–18 October

A systems-level view of cytoskeletal function

IL-Rehovot, 27–31 October

Upstream and downstream of Hox genes

IN-Hyderabad, 14–17 December

Conferences

Human evolution in the genomic era: Origins, populations and phenotypes
UK-Leicester, 1–4 April

Telomeres, telomerase and disease

BE-Brussels, 30 April–4 May

Molecular biology of muscle development and regeneration

IT-Acaya (Lecce), 14–18 May

Lymphocyte signalling

IT-Bertinoro, 17–21 May

Cellular signalling and cancer therapy

HR-Cavtat, 23–27 May

Microtubules: Structure, regulation and functions

DE-Heidelberg, 28–31 May

Enzyme mechanisms by biological systems

UK-Manchester, 1–4 June

Gene transcription in yeast: From regulatory networks to mechanisms

ES-Sant Feliu de Guixols, 14–19 June

The molecular and developmental biology of *Drosophila*

GR-Kolymbari, 22–28 June

Microbiology after the genomics revolution (Genomes 2014)

FR-Paris, 24–27 June

Viruses of microbes: Structure and function, from molecules to communities

CH-Zurich, 14–18 July

Chemical biology

DE-Heidelberg, 20–23 August

Brain development and disorders

FR-La Ciotat, 5–8 September

The molecular and cellular basis of regeneration and tissue repair

ES-Sant Feliu de Guixols, 6–10 September

Interdisciplinary plant development

UK-Cambridge, 21–24 September

Innate lymphoid cells

FR-Paris, 29 September–1 October

Centrosomes and spindle pole bodies

PT-Lisbon, 30 September–3 October

Stem cells in cancer and regenerative medicine

DE-Heidelberg, 9–12 October

Experimental approaches to evolution and ecology using yeast

DE-Heidelberg, 12–15 October

Ubiquitin and ubiquitin-like proteins: At the crossroads from chromatin to protein

AR-Buenos Aires, 19–24 October

The Endoplasmic Reticulum (ER) as a hub for organelle communication

ES-Girona, 26–31 October

From functional genomics to systems biology

DE-Heidelberg, 8–11 November

For further information, please visit EMBO Courses & Workshops

www.embo.org/funding-awards/courses-workshops

ESF | EMBO Symposia

Cell polarity and membrane trafficking

PL-Pułtusk, 10–15 May

Biology of plastids: Towards a blueprint for synthetic organelles

PL-Pułtusk, 21–26 June 2014

Synthetic biology of antibiotic production

ES-Sant Feliu de Guixols, 30 August–4 September

Long regulatory RNAs

PL-Pułtusk, 13–18 September

Flies, worms and robots: Combining perspectives on minibrains and behaviour

ES-Sant Feliu de Guixols, 8–13 November

EMBO | EMBL Symposia

Translating diabetes

DE-Heidelberg, 30 April–3 May

Tumour microenvironment and signalling

DE-Heidelberg, 7–10 May

Molecular machines: Lessons from integrating structure, biophysics and chemistry

DE-Heidelberg, 18–21 May

Epithelia: The building blocks of multicellularity

DE-Heidelberg, 27–30 August

The complex life of mRNA

DE-Heidelberg, 5–8 October 2014

Frontiers in metabolism: From molecular physiology to systems medicine

DE-Heidelberg, 17–20 November

EMBO | FEBS

Lecture Courses

Biophysics of channels and transporters

IT-Erice, 11–17 May

Nuclear proteomics

GR-Kos, 17–22 May

EMBO Global Activities
Lecture Courses

High-throughput next generation sequencing applied to infectious diseases

TN-Tunis, 15–25 September

Biochemistry and molecular biology: Bench to bedside approaches

BR-Cuiabá/Poconé, 27 October–7 November

Other EMBO events

EMBO Laboratory Management Courses

DE-Leimen, Various dates

FEBS | EMBO 2014

FR-Paris, 30 August–4 September

EMBO Members' Meeting

DE-Heidelberg, 29–31 October

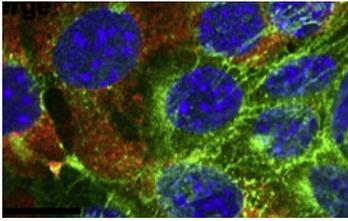
15th EMBL|EMBO

Science and Society Conference

Foods are us!

On eating and becoming

DE-Heidelberg, 6–7 November

EMBO
Molecular Medicine

RESEARCH ARTICLE

Fragile X syndrome protein linked to breast cancer progression

A research team led by scientists from VIB/KU Leuven, Belgium, and the University of Rome Tor Vergata, Italy, in collaboration with several research centers and hospitals in Italy, the United Kingdom and, Belgium, has identified the way Fragile X Mental Retardation Protein or FMRP contributes to the progression of breast cancer. The researchers demonstrated that FMRP acts as a master switch controlling the levels of several proteins involved in different stages of aggressive breast cancer, including the invasion of cancer cells into blood vessels and the spread of these cancer cells to other tissues.

“Previous studies indicated that patients with Fragile X Syndrome had a decreased risk of developing cancer but little is known about the molecular events that lead to this beneficial effect. We showed that high levels of the FMRP protein in human breast tissue samples are linked to increased risk of breast cancer and the spread of the disease to other tissues throughout the body,” EMBO Member Claudia Bagni from VIB/KU Leuven, Belgium, and the University of Rome, Italy, who led the study, remarked. “Our results suggest that FMRP acts as a master regulator of a large group of mRNAs that are involved in multiple steps of cancer progression.”

The researchers suggest that the levels of FMRP might be used as an indicator of aggressive breast cancer and could be used to predict the likelihood of the spread of cancer to other organs like the lung.

The Fragile X Protein binds mRNAs involved in cancer progression and modulates metastasis formation
Rossella Luca, Michele Averna, Francesca Zalfa *et al.*

Read the paper:
doi: 10.1002/emmm.201302847

THE
EMBO
JOURNAL

RESEARCH ARTICLE

The benefits of bacteria for gut health

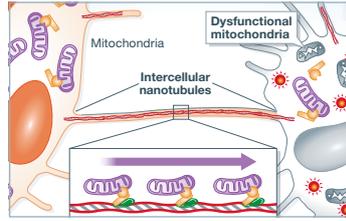
Scientists from the Emory University School of Medicine in Atlanta, United States have shown that specific gut bacteria are beneficial for maintaining a healthy intestine in the fruit fly *Drosophila* and mice and also contribute to the overall health of these organisms. The researchers demonstrated that bacteria in the gut, particularly members of the genus *Lactobacillus*, promote the growth of host epithelial cells and that this is essential for maintaining homeostasis in the intestinal system. The findings could have implications for the treatment of inflammatory bowel disease as well as allergic, metabolic and infectious disorders.

“It is well-known that mammals live in a homeostatic symbiosis with their gut microbiota and that they influence a wide range of physiological processes. However, the molecular mechanisms of the symbiotic cross-talk in the gut are largely unrecognized,” stated Andrew S. Neish, Professor at the Emory University School of Medicine, who led the research. “In our study, we have discovered that *Lactobacilli* can stimulate reactive oxygen species that have regulatory effects on intestinal stem cells, including the activation of proliferation of these cells.”

Using two different animal models, the researchers showed that the highly conserved underlying mechanism of this symbiotic relationship is the production of reactive oxygen species (ROS), by a class of conserved enzymes called NADPH oxidases or Nox'es.

Symbiotic *Lactobacilli* stimulate gut epithelial proliferation via nox-mediated generation of reactive oxygen species
Rheinnallt M. Jones, Liping Luo, Courtney S. Ardita *et al.*

Read the paper:
doi: 10.1038/emboj.2013.228

THE
EMBO
JOURNAL

RESEARCH ARTICLE

Stem cells improve damage in other cells by exporting mitochondria

A research team has identified a protein that increases the transfer of mitochondria from mesenchymal stem cells to lung cells. The researchers reveal that the delivery of mitochondria to human lung cells can rejuvenate damaged cells. The migration of mitochondria from stem cells to epithelial cells also helps to repair tissue damage and inflammation linked to asthma-like symptoms in mice.

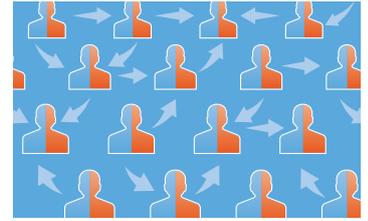
“Our results show that the movement of mitochondria from stem cells to recipient cells is regulated by the protein Miro1 and is part of a well-directed process,” remarked Anurag Agrawal, Professor at the CSIR-Institute of Genomics and Integrative Biology in Delhi, India, and one of the lead authors of the study. “The introduction of mitochondria into damaged cells has beneficial effects on the health of cells and, in the long term, we believe that mesenchymal stem cells could even be engineered to create more effective therapies for lung disease in humans.”

In the study, the protein Miro1 was shown to regulate the transfer of mitochondria from mesenchymal stem cells to epithelial cells. Stem cells that were engineered to have higher amounts of Miro1 were able to transfer mitochondria more efficiently and were therapeutically more effective when tested in mouse models of airway injury and asthma, compared to untreated cells.

“We hope to determine how this pathway might translate into better stem cell therapies for human disease,” added Agrawal.

Miro1 regulates intercellular mitochondrial transport and enhances mesenchymal stem cell rescue efficacy
Tanveer Ahmad, Shravani Mukherjee, Bijay Pattnaik *et al.*

Read the paper:
doi: 10.1002/emboj.201386030

EMBO
reports

SCIENCE & SOCIETY

Researchers propose alternative way to allocate science funding

Researchers in the United States have suggested an alternative way to allocate science funding. The method depends on a collective distribution of funding by the scientific community, requires only a fraction of the costs associated with the traditional peer review of grant proposals and, according to the authors, may yield comparable or even better results.

“Peer review of scientific proposals and grants has served science very well for decades. However, there is a strong sense in the scientific community that things could be improved,” said Johan Bollen, professor and lead author of the study from the School of Informatics and Computing at Indiana University. “Our most productive researchers invest an increasing amount of time, energy, and effort into writing and reviewing research proposals, most of which do not get funded. That time could be spent performing the proposed research in the first place.”

The new approach is possible due to recent advances in mathematics and computer technologies. The system involves giving all scientists an annual, unconditional fixed amount of funding to conduct their research. All funded scientists are, however, obliged to donate a fixed percentage of all of the funding that they previously received to other researchers. As a result, the funding circulates through the community, converging on researchers that are expected to make the best use of it.

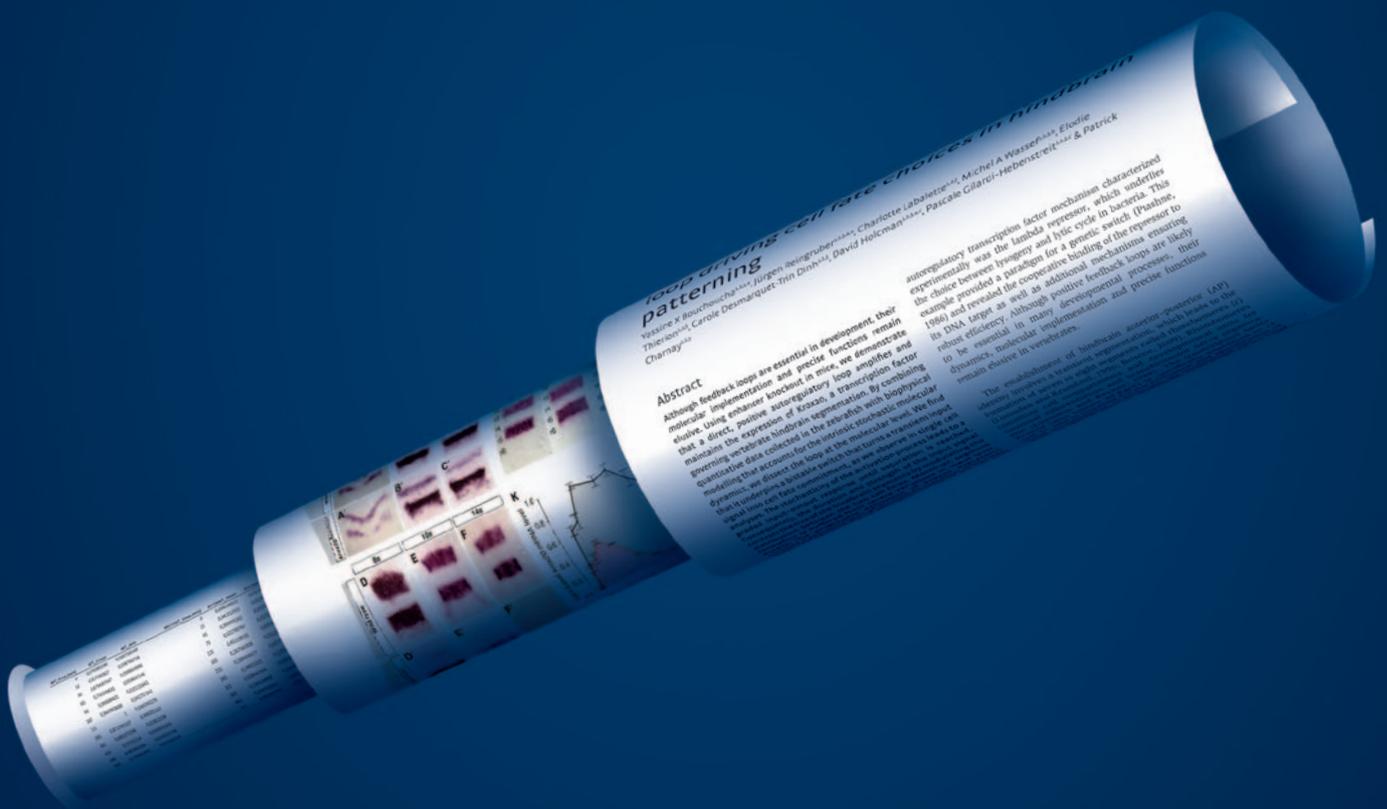
From funding agencies to scientific agency: Collective allocation of science funding as an alternative to peer review
Johan Bollen, David Crandall, Damion Junk *et al.*

Read the paper:
doi: 10.1002/embr.201338068



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Submerged beauty

According to Swiss photographer and scientist Martin Oeggerli, many forms of life “spend their time quietly, just below the radar of the human eye.” The winning images of this year’s cover contest organized by *The EMBO Journal* are wonderful examples of this notion. Oeggerli’s own first-prize contribution, a hand-coloured scanning electron microscopy image, shows a close-up view of the mouth parts of a mosquito larva. The larva lives suspended just beneath the water surface, filtering microscopic food particles with its intricately sculpted brush-like appendages.

A similarly submerged creature, though larger and not quite as well concealed, is portrayed in the other prize-winning image: a studio photograph of a Portuguese man-of-war (*Physalia physalis*). The photographer, Eric Röttinger, describes the animal as “made up of four types of polyps that form an entire colony.” One of them is a gas-filled polyp that floats on the water surface and allows the colony to sail across the oceans, catching prey with its long and venomous tentacles. Röttinger has recently joined the Institute for Research on

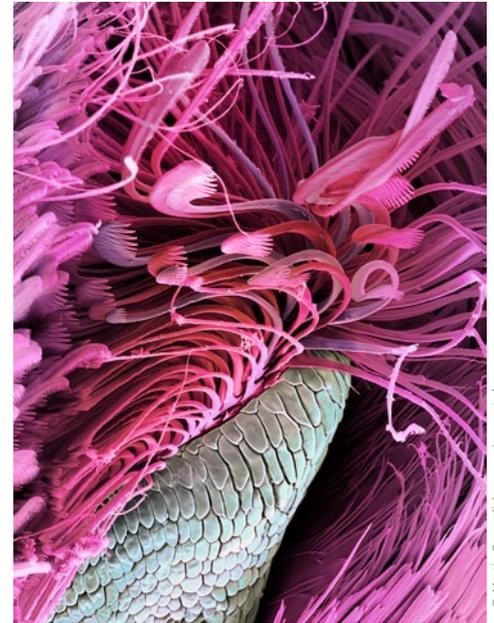


© Eric Röttinger | www.kahleimages.com

Portuguese man-of-war by Eric Röttinger
First prize, Best Non-Scientific Cover Image 2014

Cancer and Aging in Nice as a team leader to study molecular mechanisms of embryogenesis, regeneration and aging in a sea anemone.

Both winning images will be featured on the front covers of the next two issues of *The EMBO Journal*. The jury has also made a small selection



© Martin Oeggerli | www.micronaut.ch

Feeding Hairs by Martin Oeggerli
First prize, Best Scientific Cover Image 2014

of the many other beautiful images submitted to the cover contest. Visit the contest website at covercontest.embo.org to view the online gallery and find out more about the contest and its winners.

covercontest.embo.org

Multiscale modelling for brain studies

A new centre for **MULTISCALE MODELING OF BIOLOGICAL SYSTEMS** (MMBioS) in the United States aims at modelling and simulating neurotransmission and facilitating new collaborations between experimental and computational scientists.

Multiscale models in neurobiology can help scientists understand the molecular and cellular basis of brain function and neurological disorders. But first biological, physical and computer scientists must start to work together to fill the gaps between studies conducted at different scales, from molecules to tissues.

In November 2012, the United States National Institutes of Health (NIH) awarded a five-year 9.3 million US dollar grant to create a unique biomedical technology research centre, the MMBioS. MMBioS is a joint venture of four internationally ranked institutions: the University of Pittsburgh School of Medicine, Carnegie Mellon University,

the Pittsburgh Supercomputing Center and the Salk Institute for Biological Studies.

The goal is to build computational technology to assist in identifying the molecular and cellular mechanisms that control neurotransmission and signalling events, which in turn could lead to the development of novel treatments for central nervous system disorders. “We are not trying to identify new genes or determine new structures. We want to understand how they function, how neurobiological systems assemble and work together, or what is the origin of their dysfunction,” says EMBO Member Ivet Bahar, head of the MMBioS centre.

The centre is highly collaborative. It integrates and improves the efficiency of research in a broad group of laboratories, including those of leaders in the field such as Terry Sejnowski at Salk, Robert F. Murphy at Carnegie Mellon and James R. Faeder at the University of Pittsburgh. Although purely computational, the centre closely works together with many experimental laboratories. The data collected in those laboratories, along with the biomedical questions they pose, essentially drive the computational research and development at the MMBioS.

“It has been a productive first year,” says the institute head, who is also Distinguished Professor and Chair at the Department of Computational & Systems Biology at the University of Pittsburgh. The major challenge has been to establish an efficient communication system. First steps towards this goal were to reach out to researchers already doing experiments, learn more about

the challenges they are facing, and design or reshape the computational research accordingly. “Coordinating our research with laboratories that usually work independently is not exactly simple, but it is certainly worth the effort.”

The centre will also foster collaborations among modellers at different scales – from molecules through cells up to brain tissue. It comprises three Technology and Research Development projects. One of them is the development of molecular structure-based methods, including those based on elastic network models, to simulate the interactions of neurotransmitters, receptors and transporters at the chemical synapses – led by Bahar’s laboratory. In the second project, led by Sejnowski and Faeder, scientists simulate cell signalling and regulation events in the central nervous system and immune system. Images from electron microscopy help to reconstruct the structure of the synapse *in silico*. The third project led by Murphy focuses on image processing and analysis, with emphasis on understanding the overall organization of cells, and the way they are networked in the cerebral cortex.

The five-year grant is expected to trigger many new projects and this has already started to happen. Two investigators from the University of Pittsburgh, Faeder and Zuckerman, who never collaborated before, have applied for a new NIH grant to elaborate on projects beyond the scope of the new centre.

www.mmbios.org

Event

EMBO MEMBERS

EMBO members **David Hopwood** and **Julian Davies** are co-organizing the fifth *John Innes/Rudjer Bošković Summer School in Applied Molecular Microbiology* to be held at the Inter-University Centre, **Dubrovnik**, Croatia from **13–21 September 2014**. The meeting is entitled **Microbial Specialised Metabolites: Origins and Applications**. A recent resurgence of interest in microbial metabolites has resulted from the sequencing of small molecule-producing microorganisms coupled with the development of bioinformatic and chemical analysis and the realization of the importance of small molecules in microbial communities. For full information visit www.jic.ac.uk/scienceimolmicro/summerschool/.

Application deadline is 30 April 2014.

Research highlight

QIMR BERGHOFER MEDICAL RESEARCH INSTITUTE

One of the research highlights in 2013 at the QIMR Berghofer Medical Research Institute in Brisbane, Australia, was the demonstration of how the human immunodeficiency virus could be modified to prevent further replication of the virus. The expression of a mutant form of one of the regulatory proteins that controls viral transcription – the HIV-1 Tat protein – strongly inhibited the replication of the virus that causes AIDS in humans.

Apolloni et al. (2013) Human Gene Therapy 24: 270–282.

The QIMR Berghofer Medical Research Institute, which is headed by EMBO Member **Frank Gannon**, focuses on the study of cancer, infectious diseases, mental health and a range of complex diseases. Further information is available at www.qimr.edu.au

Awards of excellence

EMBO MEMBERS

Louis-Jeantet Prize for Medicine

The 2014 Louis-Jeantet Prize for Medicine is awarded to the Italian biochemist **Elena Conti** of the Max-Planck Institute of Biochemistry in Munich, Germany, for her contributions to understanding the mechanisms governing RNA quality, transport and degradation. She wins the prize together with the French medical doctor **Denis Le Bihan**. Each award is worth 700,000 Swiss Francs.

2014 Breakthrough Prize

Michael N. Hall of the Biozentrum at the University of Basel is one of the winners of the Breakthrough Prize in Life Sciences. This award honours Hall for his discovery of the target of rapamycin (TOR), a central regulator of cell growth and metabolism. The Breakthrough Prize, which is worth three million US dollars, is sponsored, among others, by internet entrepreneurs Mark Zuckerberg of Facebook, and Sergey Brin of Google.

2014 Wolf Prize in Agriculture

Leif Andersson of the Department of Medical Biochemistry and Microbiology, Uppsala University, has been awarded a 2014 Wolf Prize in Agriculture “for providing groundbreaking contributions to plant and animal sciences, respectively, by using modern technologies of genomic research.” He has been awarded the 100,000 US dollar prize together with **Jorge Dubcovsky** of the University of California, Davis, United States. The Israel-based Wolf Foundation awards these prizes to outstanding scientists and artists in the fields of agriculture, chemistry, physics, mathematics, medicine and the arts.

Gottfried Wilhelm Leibniz Prize 2014

Irmgard Sinning of the University of Heidelberg, Germany, is one of the recipients of the Leibniz Prize 2014. Sinning, a structural biologist, received the prize for her work on protein complexes that transport different membrane proteins to the correct cellular compartments in

the appropriate target membranes. The Leibniz Prize is Germany's most prestigious research prize worth 2.5 million Euros.

2013 AAAS Fellows

Geneviève Almouzni, **Wim G.J. Hol**, **Stefan Jentsch**, **Karen Heather Vousden**, **Richard D. Wood**, **Bart de Strooper** and **Nobutaka Hirokawa** have been elected Fellows of the American Association for the Advancement of Science (AAAS) for 2013. **Michele Garfinkel**, Manager of the Science Policy Programme at EMBO, has also been elected AAAS Fellow in the category *Societal impacts of science and engineering*.

Academia Europaea

Annalisa Pastore has been invited to join the Academia Europaea Section of Biochemistry & Molecular Biology as one of 20 new members. The Academy was founded twenty-five years ago to promote excellence in science and scholarship around Europe. Professor Pastore recently relocated her laboratory from the MRC National Institute for Medical Research to the newly built Maurice Wohl Clinical Neuroscience Institute at King's College London.

Carmen and Severo Ochoa Foundation Prize

Paloma Más Martínez from the Center for Research in Agricultural Genomics, Barcelona, Spain, has been awarded the prestigious Carmen and Severo Ochoa research prize for molecular biology. She receives the prize for her contribution to the study of *Arabidopsis thaliana*.

Hooke Medal

This year's Hooke Medal winner is **Anne Bertolotti** from the MRC Laboratory of Molecular Biology in Cambridge. Her laboratory focuses on fundamental cell biological processes and uncovers novel strategies to manipulate disease-relevant pathways. The British Society for Cell Biology awards this medal each year to an outstanding UK cell biologist who has been working as an independent research scientist for less than 10 years.

Heinrich Wieland Prize 2013

Tony Kouzarides of the Gurdon Institute in Cambridge, United Kingdom, won the Heinrich Wieland Prize for his research on gene regulation and cancer. The 50,000 Euros award is given annually by the Boehringer Ingelheim Foundation.

2013 Institute of Medicine Members

EMBO Associate Member **Ronald N. Germain** of the National Institute of Allergy and Infectious Diseases, United States, has been elected to the Institute of Medicine (IOM), a prestigious US advisory body that provides recommendations on health issues and science policy. His research focuses on understanding how the immune system operates and how pathogens affect their hosts.

IBM Faculty Award

Yitzhak Pilpel of the Weizmann Institute of Science, Israel, was recently presented with a 2013 IBM Faculty Award. The IBM Faculty Award is a competitive worldwide programme that fosters collaboration between researchers at leading universities and those in IBM research, development and services organizations.

Honorary Medal

The immunologist **Klaus Rajewsky** of the Max Delbrück Center for Molecular Medicine in Berlin, Germany, has been awarded the Honorary Medal 2013 of the Signal Transduction Society (STS) and the Journal Cell Communication and Signaling (CCS) for his pioneering work on the genetic analysis of signal transduction pathways in mouse models.

Hansen Family Award

Hans-Georg Rammensee of the University of Tübingen is the recipient of the Hansen Family Award. The Bayer Science & Education Foundation awarded the scientific prize of 75,000 Euros for his outstanding contributions to the field of cancer treatment and his work towards personalized medicine.

CNRS Silver Medal

Anne Houdusse, research director at the National Center for Scientific Research (CNRS) and head of the Structural Motility group at the Curie Institute, has been awarded the CNRS Silver Medal for 2013. The award recognizes her contribution to the decryption of mechanisms that allow complex molecules such as molecular motors, and more specifically myosin, to transform chemical energy into motion or power in cells.

Academic Excellence Prize of the Empeirikion Foundation

Nektarios Tavernarakis was awarded this prize for his seminal research achievements relevant to ageing, neurodegeneration, learning and memory. He was also elected new Research Director at the Institute of Molecular Biology and Biotechnology, based in Heraklion, Crete.

EMBO YOUNG INVESTIGATORS

Hugo Theorell Prize

The Hugo Theorell prize in biophysics for the year 2013 is awarded to **Luca Jovine** from the Karolinska Institutet, Sweden, for fundamental biological research that has provided unique structural insight into the fertilization process in mammals. The Swedish Society for Biochemistry, Biophysics and Molecular Biology awards the Hugo Theorell Prize to a young and successful biophysicist working in Sweden.

Friedrich-Miescher-Award

Sophie Martin of the University of Lausanne, Switzerland, is the recipient of the 2014 Friedrich-Miescher-Award. She received the award for her work on cell polarization and cell cycle regulation. The prize honours young biochemists and is donated by the Friedrich-Miescher-Institute of the Novartis Research Foundation in Basel.

CONSOLIDATOR GRANTS AND SYNERGY GRANTS | ERC

Congratulations to EMBO Members, Young Investigators and Installation Grantees who received this year's Consolidator Grants and Synergy Grants awarded by the European Research Council. The full list of names can be found at: http://erc.europa.eu/past_press_releases/2013

Next issue of *EMBOencounters*

The next *EMBOencounters* issue – **Summer 2014** – will be dispatched in **July 2014**. Please send your suggestions, contributions and news, to communications@embo.org by **12 May 2014**.

EMBO Young Investigators & Installation Grantees 2013

YOUNG INVESTIGATORS 2013

Ido Amit
The mammalian gene regulatory network
IL Weizmann Institute of Science,
Rehovot

Pedro Carvalho
Homeostasis of the endoplasmic
Reticulum
ES Center for Genomic Regulation,
Barcelona

Chunaram Choudhary
Post-translational modifications
DK University of Copenhagen

Victoria Cowling
Regulation of methyl cap synthesis
UK MRC Protein Phosphorylation &
Ubiquitylation Unit, Dundee

David Drew
Structure and mechanism of
membrane proteins
SE Stockholm University

Florent Ginhoux
Dendritic cells
SI Singapore Immunology Network,
A*STAR

Petra Hajkova
Epigenetic reprogramming *in vivo*
UK MRC Clinical Sciences Centre,
Imperial College London

Kim Jensen
Regulatory mechanisms of
stem cell behaviour
DK University of Copenhagen

Kerstin Kaufmann
Molecular control of organ
specification in plants
DE University of Potsdam

Melike Lakadamyali
Imaging life's processes
ES The Institute of Photonic Sciences,
Castelldefels

Darren Logan
Olfaction and behaviour
UK Wellcome Trust Sanger Institute,
Cambridge

Andrew Lovering
The bacterial predator *Bdellovibrio*
bacteriovorus
UK University of Birmingham

Brian Luke
Telomere function and cellular
senescence
DE University of Heidelberg

Niels Mailand
Proteome-wide analysis of
ubiquitylation
DK University of Copenhagen

Tomas Marques-Bonet
Primate genomic variation
ES Pompeu Fabra University, Barcelona

Sascha Martens
Molecular mechanisms of
autophagy
AT University of Vienna

Olivier Mathieu
Silencing, environment and
transposons
FR Clermont University

Anna Sablina
Mechanisms of cell transformation
BE VIB & KU Leuven

Simon Sprecher
Development and function of
sensory systems
CH University of Fribourg

Manuel Théry
Cell architecture and polarity
FR Institute of Life Sciences Research
and Technologies, Grenoble
University Institute of Haematology,
Paris

Pavel Tolar
Activation of immune receptors
UK MRC Institute for Medical Research,
London

Jan-Willem Veening
Cell division in the pathogen
Streptococcus pneumoniae
NL University of Groningen

Julien Vermot
Blood flow sensing and cardiovascular
morphogenesis
FR Institute of Genetics and Molecular
and Cellular Biology, Illkirch

INSTALLATION GRANTEES 2013

Edgar Gomes
Nuclear positioning
PT Institute of Molecular Medicine, Lisbon
Moving from:
FR Pierre and Marie Curie University

Mustafa Köksal
Biosynthetic enzymes
TR Izmir Institute of Technology
Moving from:
US University of Pennsylvania

Raquel Oliveira
Chromosome dynamics
PT Gulbenkian Institute of Science, Oeiras
Moving from:
UK University of Oxford

Karel Riha
Blunt-ended telomeres in plants
CZ Masaryk University, Brno
Moving from:
AT Gregor Mendel Institute, Vienna

Özgür Şahin
Systems biology
TR Bilkent University, Ankara
Moving from:
US MD Anderson Cancer Center,
Houston, Texas

Joanna Sułkowska
Knotted proteins
PL Warsaw University, PL
Moving from:
US University of California, San Diego

A good read – Publications from the EMBO Community

EMBO MEMBERS, YOUNG INVESTIGATORS & FELLOWS

Citrullination regulates pluripotency and histone H1 binding to chromatin

John B. Gurdon, Tony Kouzarides (EMBO Members), Gonçalo Castelo-Branco, Maria A. Christophorou (EMBO Fellows) and colleagues

Nature | 26 January 2014
doi: 10.1038/nature12942

The effects of genetic variation on gene expression dynamics during development

Ben Lehner (EMBO Member) and colleagues

Nature | 9 January 2014
doi: 10.1038/nature12772

RecA bundles mediate homology pairing between distant sisters during DNA break repair

David J. Sherratt (EMBO Member), Christian Lesterlin (EMBO Fellow) and colleagues

Nature | 22 December 2013
doi: 10.1038/nature12868

Host–cell sensors for *Plasmodium* activate innate immunity against liver-stage infection

Vanessa Zuzarte-Luís (EMBO Fellow), Giulio Superti-Furga (EMBO Member) and colleagues

Nature Medicine | 22 December 2013
doi: 10.1038/nm.3424

Astrocytes mediate synapse elimination through the MEGF10 and MERTK pathways

Laura E. Clarke (EMBO Fellow) and colleagues

Nature | 19 December 2013
doi: 10.1038/nature12776

Structural basis of lentiviral subversion of a cellular protein degradation pathway

David Schwefel (EMBO Fellow) and colleagues

Nature | 15 December
doi: 10.1038/nature12815

ELABELA: A hormone essential for heart development signals via the apelin receptor

Bruno Reversade (EMBO Young Investigator) and colleagues

Developmental Cell | 5 December 2013
doi: 10.1016/j.devcel.2013.11.002

Inactivating CUX1 mutations promote tumorigenesis

Inigo Martincorena (EMBO Fellow) and colleagues

Nature Genetics | 8 December 2013
doi: 10.1038/ng.2846

Magnetic resonance imaging of tumor glycolysis using hyperpolarized ¹³C-labeled glucose

Tiago B Rodrigues (EMBO Fellow) and colleagues

Nature Medicine | 8 December 2013
doi: 10.1038/nm.3416

The bacterial cell division proteins FtsA and FtsZ self-organize into dynamic cytoskeletal patterns

Martin Loose (EMBO Fellow) and colleagues

Nature Cell Biology | 8 December 2013
doi: 10.1038/ncb2885

Niche-independent high-purity cultures of Lgr5+ intestinal stem cells and their progeny

Hans Clevers (EMBO Member), Henner F Farin (EMBO Fellow) and colleagues

Nature Methods | 1 December 2013
doi: 10.1038/nmeth.2737

Structural basis of SUFU-GLI interaction in human Hedgehog signalling regulation

Luca Jovine (EMBO Young Investigator) and colleagues

Biological Crystallography Online
19 November 2013

A holdic medium for *Drosophila melanogaster*

Linda Partridge (EMBO Member), Ricardo Leitão-Gonçalves (EMBO Fellow)

Nature Methods | 17 November 2013
doi: 10.1038/nmeth.2731

Genome-wide association study using cellular traits identifies a new regulator of root development in *Arabidopsis*

Takashi Tsuchimatsu (EMBO Fellow) and colleagues

Nature Genetics | 10 November 2013
doi: 10.1038/ng.2824

A retrotransposon-driven dicer isoform directs endogenous small interfering RNA production in mouse oocytes

Kristian Vlahovicek, Petr Svoboda (EMBO Installation Grantees) and colleagues

Cell | 7 November 2013
doi: 10.1016/j.cell.2013.10.001

Multisite phosphorylation networks as signal processors for Cdk1

Mart Loog (EMBO Installation Grantee) and colleagues

Nature Structural & Molecular Biology
3 November 2013 | doi: 10.1038/nsmb.2706

Crystal structure of the 14-subunit RNA polymerase I

María Moreno-Morcillo (EMBO Fellow), Umar J. Rashid (EMBO Fellow) and colleagues

Nature | 23 October 2013
doi: 10.1038/nature12636

A pH-regulated quality control cycle for surveillance of secretory protein assembly

Roberto Sitia (EMBO Member) and colleagues

Molecular Cell | 27 June 2013
doi: 10.1016/j.molcel.2013.04.016

R-Loop stabilization represses antisense transcription at the *Arabidopsis* FLC locus

Caroline Dean (EMBO Member) and colleagues

Science | 3 May 2013 | doi: 10.1126/science.1234848

Mouse urinary peptides provide a molecular basis for genotype discrimination by nasal sensory neurons

Hans-Georg Rammensee (EMBO Member) and colleagues

Nature Communications | 19 March 2013 | doi: 10.1038/ncomms2610

7 April FEBS/EMBO bursaries

1 May Abstract submission

12 May Early registration



An anniversary conference

Paris 2014 hosted by SFBBM

30 August – 4 September

Keynote Speakers

Catherine **Dulac**

Svante **Pääbo**

Conference Chairs

Susan M. **Gasser**

Angela **Nieto**

Michael **Reth**

Eric **Westhof**

30

concurrent sessions
covering the latest
research in the
life sciences

Plenary Speakers

Ruedi **Aebersold**

David **Baulcombe**

Hans **Clevers**

Max D. **Cooper**

Richard **Durbin**

Elaine **Fuchs**

Maria **Jasin**

Wolf **Reik**

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