

Sustainable agriculture: The global need for local practices

Modern advances in agriculture have brought about significant improvements in food productivity and helped many farmers increase their yields and incomes. But the benefits of biotechnology are distributed unevenly, showing that a one-size-fits-all method is not always the most appropriate. Especially in resource-poor countries afflicted by droughts and problem soils, farmers fail to profit. New strategies such as conservation, organic agriculture and participatory breeding are considered realistic alternatives for regions where the green revolution has not really gained ground – for example in many African and Near Eastern countries. But these approaches need time to yield results and require intensive training and assistance for farmers. Will the new practices lead to higher productivity across all farms, soil types and regions? This is one of the issues that the 10th EMBO/EMBL Science & Society Conference taking place in early November 2009 in Heidelberg will focus on.

It is bright-red, tastes refreshing and has been popular in Africa for hundreds of years. Now, western Europe is also catching up – you can find dried hibiscus for sale in trendy supermarkets at high prices. Growing this beautiful flower also secures extra income for nearly a thousand farmers in small villages surrounding the Senegalese capital city Dakar. The business, initiated by *Chido Makunike*, has just completed its first year. Makunike, former coordinator at the International Federation of Organic Agriculture Movements in Bonn, Germany, left his job a few years ago to become an agricultural consultant and trader based in Dakar. He buys hibiscus from hundreds of Senegalese smallholders and sells it to Europe. "I have accessed a bigger market, so they can grow

Chido Makunike on a plantation in Senegal, kneeling beside a plant that is about half-way to full maturity



more," he said. The plant does not need much attention and does not interfere with other farming activities. "It is the perfect crop and gives farmers extra income."

Farming in West African countries like Senegal is particularly difficult compared with other regions on the continent. The climate is extremely hot, water remains a scarce resource on the arid fields, and money for costly fertilizers is largely unavailable. Weak infrastructure, bad roads and no access to markets are additional constraints that make it difficult for the farmers to raise their living standards. "The biggest problem in Senegal is not an insufficient amount of food, but insufficient access to food," stated Makunike. There is plenty of food available at the markets and in the shops, but for most it is out of reach – because it is just too expensive.

The green revolution has played a key role in improving the food supply in countries such as Brazil, China and India over the past forty years. But it did not really take off in Africa for a number of reasons. The biotechnological methods have largely ignored poor smallhold-



Farming in Tanzania: The hand jab planter *matraca* speeds up the planting process and allows farmers to work in a standing position

ers who could not afford initial investments. They were also heavily geared to the three leading crops – maize, rice and wheat – but did not apply to plants important in sub-Saharan Africa, such as millet, banana or peanut. Finally, they largely neglected areas with difficult soils, drought and uncertain rainfall – problems common in Africa as well as in many Near Eastern countries.

However, other approaches are more appropriate to small-scale agriculture in the drought-stricken regions of the world. "Conservation agriculture is the way to go to achieve higher productivity across all farms, soil types and regions without decreasing soil fertility," according to *Josef Kienzle*, agro-industries officer at the Food and Agriculture Organization (FAO) in Rome, Italy. Conservation

Sustainable agriculture

Continued from first page

agriculture means reducing tillage to the minimum by using non-invasive devices such as ripers and subsoilers. Crops are planted directly through the soil cover with special planters. Depending on the available power source on the farm, such planters are available for hand labour, draught animal power or small tractors. Additionally, a permanent cover of plant material – either living cover crops or mulch – protects the soil against erosion by rain, sun and wind, and crop rotation prevents the build-up of pest and diseases.

“We know areas of success in Africa, where this approach shows impact,” said Kienzle. Zambia for example successfully implemented the so-called basin system in which farmers prepare the land before the start of the rainy season by digging holes in the earth where they put the seeds. By doing so, they do not lose a single day of rain, because the basins are prepared and planting can start immediately. A popular manual planting and fertilizing tool used in Kenya and Tanzania is a hand jab planter called a *matraca*. It is more efficient than planting with conventional hand hoes and allows the farmers to plant in a standing position.

Conservation agriculture is a long term-approach that needs three to four years to show results. Plus, it is knowledge-intensive and requires extensive training of the users. “But we see a lot of progress,” stated Kienzle, who coordinates an initiative funded by the FAO in Kenya and Tanzania. “Faced with increasingly unstable weather conditions, more droughts and heavier rains, I do not really see alternatives. We do not have any time to lose”.

Chido Makunike swears by organic agriculture – a variation of conservation agriculture that excludes all external input such as pesticides, chemical fertilizers and genetically modified organisms. While organic agriculture accounts for only a niche market in Western Europe for example, African agriculture is per se characterized by very low levels of input. “Most farming in Africa is already de facto organic,” claimed the agro-expert.

The typical Senegalese farmer who owns a quarter or a half an acre barely manages to

sustain his family. Even a record crop does not change much, because the remaining harvest is usually lost, explained Makunike: “There is too much emphasis on selling fresh products and no knowledge of value-addition.” Farmers



Salvatore Ceccarelli (first on right) explaining the benefits of regional crops to Iranian farmers

do not know how to preserve the crop. Leaving it in the sun to dry is not enough, so it rots within a day or two, simply because there are no roads to bring the harvest to the market fast enough. “We need help with organic, sustainable means of farming to increase the yields, to be able to farm in areas that are not accessible and to help the farmers on the marketing side.”

Empowering farmers is also the guiding principle of *Salvatore Ceccarelli* from the International Center for Agricultural Research in the Dry Areas (ICARDA), based in Syria. It was nearly thirty ago that Ceccarelli decided to leave Italy and his position as a university professor at Perugia and head towards the Near East to help develop a new approach to farming. During his previous visits to countries such as Yemen, Jordan and Iran he was shocked to see how scientists and politicians alike ignored the rural population. “In Syria it is considered disgraceful to talk to a farmer. They are told what to do and are not supposed to ask why,” he remembered. “So I’ve been trying to change all this.”

Ceccarelli is convinced that only so-called participatory plant breeding can help the poor smallholders stand on their own feet. He started with one village in north Syria and is now working with 55 villages in six countries. His goal is to promote regional crops. Instead

of planting the same high-performance varieties everywhere, the farmers focus on those accustomed to the specific environmental conditions of their fields and use them for breeding. “It is a highly decentralized process

that gives a voice to farmers, including those who have been the most marginalized such as women,” commented Ceccarelli.

So far, he and his teams have focused on barley. But the participatory approach shows spill-over effects. In future, he plans to try the same with wheat, lentils, chickpeas and soy beans. Recently, an NGO in Iran showed interest in expanding the already existing programme on wheat and barley to lentils and rice, and negotiations with farming communities in Algeria about

including other crops are already under way. Ceccarelli also sees potential in modern technologies: “If I had 160,000 dollars, I would provide each of the 55 villages with a desktop computer and a digital camera.” That would facilitate his job and reduce the need to travel to diverse communities, where he has to repeat the same things over and over again. “With that amount of money we could create a network and farmers could share new ideas spontaneously. Because at the moment, I am their Internet.”

“We have never seen so many hungry people in the world,” announced the FAO after a two-day meeting with the Organization for Economic Cooperation and Development (OECD), held in Paris in May this year. In approaching the food crisis facing the world, there is much support for a second green revolution that involves the use of new technologies and genetically modified organisms (GMOs) (see *EMBOencounters* 11 and 12). But many countries fear the loss of local biodiversity, growing genetic uniformity and susceptibility to disease – as well as the dependence on Western Europe and the US. Africans have been farmers for thousands of years. One potential scenario for them would be not to import “ready made” GM crops, but to develop homegrown solutions by exploiting a range of options – organic, conservation, as well as participatory technologies.

Yvonne Kaul

We were literally in the dark

Interview with the winner of the EMBO Gold Medal 2009

At the age of 36, **Olivier Voinnet** is one of the youngest EMBO Gold Medal winners. "I consider him one of the most talented, original and effective young scientists," wrote **Witold Filipowicz** in his nomination letter. Olivier worked closely with **David Baulcombe** and **Andrew Hamilton**, the discoverers of short interfering RNAs (siRNAs). Together they found out that small RNAs have a fundamental role in antiviral defense in plants and other organisms: when attacked by a virus, plant cells use RNA silencing to protect themselves from the virus. The discovery opened a whole new field in molecular biology and holds a lot of promise for new gene therapies and vaccine designs. Olivier now leads a team of 25 at the CNRS Institute of Plant Molecular Biology Institute in Strasbourg.

Olivier, the area of siRNAs and microRNAs is a hot topic and is becoming competitive. Why do you think it is so?

There is probably no other biological field where scientists managed in just 15 years to establish a new discipline, get a Nobel prize and then receive millions and millions of dollars for pharmaceutical trials and drug design. I think that RNA silencing is so hot because scientists can now reconsider things that they never understood before, like the post-transcriptional regulations through microRNAs or siRNAs. Step by step we discover all the implications of these tiny molecules. RNAs are involved in all aspects of biology. Only within the last couple of years hundreds of papers

have been written associating small RNAs or microRNAs to specific diseases. It is amazing how we could have missed all this information in the past.

How did you become interested in this topic?

When I started my PhD in David Baulcombe's lab in Norwich we did not know anything about small RNAs. RNA interference had not been discovered either. We were literally in the dark. David was among the first who thought that silencing could form the basis of an immune system not only in plants but probably also in other organisms. Later on I became interested in understanding the function of a particular type of small RNAs, the microRNAs, and the way pathogens interfere with their pathway. From there it was only a step away from asking whether what we found in plants would also apply to other organisms. So we moved on to exploring these processes in human cells.

That leads to our next question: what do you think are the implications of your research for human health, plant propagation or even crop growing?

There are many practical implications resulting from small RNAs. The expression of a double-stranded RNA with sequence homology to a virus is currently commercially exploited by several companies for crop protection. In Hawaii, RNA silencing is used to protect papaya against the papaya ringspot virus. With regard to human health, a lot of money has been invested in research on microRNAs for cancer therapy. Some oncogenes or tumor suppressor genes actually correspond to microRNA genes. On the applied side, artificially designed small RNAs are now being used as therapeutics, as in macular degeneration, a disease of the eye.

What do you think was the key attribute that helped you in your career?

What has always driven me is curiosity. I just like to check out things and dig. In fact, silencing is an ideal field for a curious person. Losing my curiosity is the thing that I fear the most.



© Olivier Voinnet

EMBO Gold Medalist: Strasbourg researcher, Olivier Voinnet

Do you define the problem before you start doing the research?

Always. I do not throw dice and see what is going on. Even despite being very specific in what we are looking for I often bump into new areas. But you have to be persistent. Andrew Hamilton spent three years solely trying to find out the siRNAs involved in silencing and he was successful. But at the same time ignoring all things novel and unexpected is probably the worst you can do. Some observations you may not understand immediately, but it is good to keep track of them. I always have a little book where I write down my observations.

What are your next steps?

This field holds a lot of promise for medical treatments. But it is maybe a bit too young to be sure that things are working the way we think they work. The more we know about the implications of micro RNAs and the more we do genetics as opposed to computational predictions, the more we realize that we are missing some points. We still have to be very humble. Whether in plants, in human cells or *Drosophila* – there is a lot to do on the basic aspect of this mechanism. And this is what I intend to do.



Manietta Schupp (EMBL - Photolab)

Istanbul hosts EMBO Young Investigators

Annual meeting for young group leaders

Attendance at this year's annual EMBO Young Investigators meeting set a record: 72 scientists came to the lovely setting of Boğaziçi University in Istanbul, Turkey, from 13–16 May. Coordinated by *Arzu Çelik* and *Nesrin Özören*, it was the second meeting that took place outside Heidelberg, after the 2006 event in Vienna, Austria.

The beneficiaries of the EMBO Young Investigator Programme meet annually to present the latest from their research, share expertise and set up new collaborations. Themes included molecular medicine, neurobiology, immunology and disease, development, RNA and epigenetics. Lively discussions followed the sessions – also with regard to the programme's future plans and new proposals.

The Turkish hosts took the opportunity to invite six of the participants to give lectures in institutes in Ankara and Istanbul. Inspired by the successful neurobiologists' meeting, more satellite events will be organized by diverse subgroups. Finally, there are plans to support the Young Investigators' predocs with an additional financial scheme.

"With 210 scientists selected since the start of the programme, the EMBO Young Investigators group has reached a critical mass, providing new platforms for exchange and increased dynamics," said Gerlind Wallon, programme manager.

"Meeting the crowd again was a real pleasure. It is always exciting for me to meet new members and to witness the progress of the 'seniors,'" commented *Kristian Vlahoviček*, an Installation Grantee from Croatia, who attended the meeting for the third time. "All in all, top notch science and great people in superb surroundings," he concluded.



Boğaziçi University, formerly the American Robert College, is one of the top universities in Turkey – and probably one of its most picturesque academic locations. The ancient city centre that connects Asia and Europe was the place to be after the tight conference programme. One of the highlights included a dinner on a boat crossing the Bosphorus at dusk, with beautiful views of the illuminated city panorama.



Top:
This year's EMBO Young Investigator meeting was held in Istanbul, the global crossroads where Europe and Asia meet. A boat ride across the Bosphorus with a view of Hagia Sophia was one of the highlights

Below:
Lively discussions among group leaders



Ten years on

Anniversary of the joint EMBO/EMBL Science & Society Conference

Molecular biology has dramatically changed our understanding of life over the last six decades. Just as in other scientific disciplines, a period of exciting basic research sparked new developments in applied research, followed by widespread application. Molecular biology has revolutionised medical research. The new understanding of disease has also led to novel cures and treatments, advanced diagnostics and improved our ability to prevent disease.

Our capacity to apply our knowledge in areas that directly affect everyone's life calls for a social consensus on how to employ this ability to the common good. Also, citizens need to be aware of the implications of scientific developments that are largely publicly funded. As consumers, patients and concerned individuals in a society, they should be able to make informed decisions in the best interest of future generations. Molecular biologists early on openly discussed the new opportunities their research offered as well as its technical and ethical limits. This is best exemplified by the Asilomar Conferences held in the early 1970's in the US, where leading molecular biologists gathered and discussed consequences

of DNA cloning and prepared the ground for regulatory guidelines.

In 2000, EMBO and EMBL pioneered a series of annual conferences on Science & Society. Both organizations felt the need to improve public understanding of science to mitigate feelings of fear and distrust in society. The original idea was to bring together life scientists and social scientists, philosophers, journalists, policy makers, educators and interested citizens. This new forum for exchange was planned to close the perceived gap between all sides. Developing a new dialogue – the title of the inaugural conference – summarized the intention of the annual event. Topics ranged from case studies on AIDS and BSE to gene therapy, human genome project and the business of biotechnology. The unrestrained, direct exchange between the speakers and the audience differed from typical podium speeches. Rather than passing criticism on each other via mass media in defense of their views, both the research community and representatives from other disciplines agreed to discuss the controversial issues on equal terms – a democratic process that was a novelty.

Many topics have been covered over the past ten years, but some keep coming back. The question of human enhancement absorbed the participants in 2005 and then again in 2007 during the conference *The Future of our Species – Evolution, Disease and Sustainable Development*. Arguments both for and against the use of stem cells frequently re-appeared, causing either vehement support or concerted protests.

One of the issues raised during the inaugural meeting was Agricultural GMOs in Europe. Ten years on, the topic is still hot. And it is surely not the last time that the pros and cons of genetic engineering will occupy the audience in the new auditorium of the EMBL Advanced Training Centre in Heidelberg.



Genetics, Determinism and Human Freedom was the conference title in 2003, as the graphic from the abstract booklet illustrates

Recently seen in Heidelberg



Christine Paragoidis (EMBL-PhotoLab)

Fritz Kuhn (left) and Hermann Bujard at EMBO

Fritz Kuhn, Member of the German Federal Parliament and parliamentary party leader of the German Green Party, visited EMBO at the end of May. EMBO Director *Hermann Bujard* and Deputy Director *Gerlind Wallon* introduced to him the various EMBO programmes and activities with particular emphasis on Science & Society topics. During the meeting, Fritz Kuhn accepted an invitation from Hermann Bujard to speak at the 10th EMBO/EMBL Science & Society Conference held in November in Heidelberg. He will speak on *The Importance of Being Curious and Responsible*.

EMBO EVENTS 2009 – 2010 (partial list)

PRACTICAL COURSES (EUROPE)

- Two-photon imaging of brain cell dynamics
CH – Zurich, 6–13 September
- Image processing for cryo-electron microscopy
UK – London, 7–17 September
- Networks in biology analysis, modeling and reverse engineering
IT – Bologna, 22–25 September
- Quantitative FRET, FRAP and FCS
DE – Heidelberg, 23–28 September
- Current methods in cell biology
DE – Heidelberg, 8–16 October
- Advanced analysis and informatics of microarray data
UK – Hinxton, 12–17 October
- The combination of electron microscopy and x-ray crystallography for the structure determination of large biological complexes
FR – Gif-sur-Yvette, 18–24 October
- High throughput microscopy for systems biology
DE – Heidelberg, 8–13 November
- Computational RNA Biology
FR – Cargese, 26 April – 1 May 2010
- Scientific programming and data visualization for structural biology
DE – Heidelberg, 5–7 May 2010
- Animal models for physiology and disease
UK – Sheffield, 19–30 July 2010
- Post-translational modifications of proteins: from discovery to functional analysis
SE – Uppsala, 22–24 August 2010
- Protein expression, purification and crystallization (PEPC-7)
DE – Hamburg, 31 August – 8 September 2010
- Advanced analysis and informatics of microarray data
UK – Hinxton, 18–23 October 2010

PRACTICAL COURSES (WORLD)

- Structure and dynamics of biomolecules by NMR spectroscopy
AR – Rosario, 21–30 September
- Mass spectrometry in protein analysis and characterization
UY – Montevideo, 16–26 March 2010

WORKSHOPS (EUROPE)

- 2009 EMBO Molecular Medicine Workshop – Invasive growth: A genetic programme for stem cells and cancer
IT – Torino, 10–12 September
- Messenger RNA 3' ends and gene expression
UK – Oxford, 16–20 September
- Mitochondria, apoptosis and cancer
CZ – Prague, 1–3 October
- Evo-Devo meets marine ecology: New frontiers in ocean science through integrative biology
IT – Ischia (Napoli), 9–11 October
- Protein and lipid function in secretion and endocytosis
AT – Goldegg am See, 12–17 January 2010
- Visualizing Biological Data (VizBi)
DE – Heidelberg, 3–5 March 2010
- Hedgehog signaling: from developmental biology to anti-cancer drugs
FR – St. Jean Cap Ferrat, 27–31 March 2010

WORKSHOPS (EUROPE)

- Cell guidance signals in cancer
IT – Camogli - Portofino Vetta, 6–9 May 2010
- Proteolysis and neurodegeneration (5th INPROTEOLYS meeting)
ES – Madrid, 6–8 May 2010
- RNA quality control
AT – Vienna, 10–13 May 2010
- Genomic approaches to interactions between plant viruses, their hosts and their vectors
IT – Fenestrelle, 11–15 June 2010

CONFERENCE SERIES

- The physics of cells
HR – Dubrovnik, 6–13 September
- Meiosis
FR – Isle sur la Sorgue, 19–23 September
- Morphogenesis and dynamics of multicellular systems
DE – Heidelberg, 2–6 October
- Endocytic machineries in control of cell signalling and tissue morphogenesis
GR – Chania, 3–8 October
- Comparative genomics of eukaryotic microorganisms: diversity of life
ES – San Feliu de Guixols, 17–22 October
- Autophagy – cell biology, physiology and pathology
CH – Ascona, 18–21 October
- Catalytic mechanisms by biological systems: at the interface between chemistry and biology
DE – Hamburg, 5–7 May 2010
- *C. elegans* development and gene expression
DE – Heidelberg, 17–20 June 2010
- Chemical Biology 2010
DE – Heidelberg, 22–25 September 2010

CONFERENCE SERIES *second in a series*

- Protein synthesis and translational control
DE – Heidelberg, 9–13 September
- Antigen receptor signalling: from lymphocyte development to effector function
IT – Certosa di Pontignano, 12–16 September
- Ubiquitin and ubiquitin-like modifiers in health and disease
IT – Riva del Garda, 23–27 September
- Nuclear receptors: from molecular mechanisms to molecular medicine
HR – Dubrovnik, 25–29 September
- Nuclear structure and dynamics
FR – Isle sur la Sorgue, 30 September–4 October
- The assembly and function of neuronal circuits
CH – Ascona, 5–8 October
- Host genetic control of infectious diseases
FR – Paris, 7–10 October
- *Legionella*
FR – Paris, 13–17 October
- Cellular signaling and molecular medicine
HR – Cavtat (Dubrovnik), 21–26 May 2010

CONFERENCE SERIES *third in a series*

- The molecular and developmental biology of *Drosophila*
GR – Kolymbari, 20–26 June 2010
- Molecular and cellular basis of regeneration and tissue repair
PT – Sesimbra, 26–30 September 2010

LECTURE COURSE (WORLD)

- Virus–host: partners in pathogenicity
CR – San Jose, 23–26 February 2010

EMBO–ESF SYMPOSIA

- B cells and protection: back to basics
ES – Sant Feliu de Guixols, 18–23 April 2010
- Antiviral applications of RNA interference
ES – Sant Feliu de Guixols, 30 May–4 June 2010
- Emergent properties of the cytoskeleton: molecules to cells
ES – Sant Feliu de Guixols, 3–8 October 2010
- Functional neurobiology in minibrains: from flies to robots, and back again
ES – Sant Feliu de Guixols, 17–22 October 2010
- Molecular perspectives on protein–protein interactions
ES – Sant Feliu de Guixols, 21–26 November 2010

EMBO–FEBS LECTURE COURSES

- Proteins and their networks – from specific to global analysis
GR – Spetses, 7–17 September 2009
- The cytoskeleton in development and pathology
SE – Djurhamn, 19–24 June 2010
- Molecular and cellular cognition
IT – Venice, 14–19 October 2010

OTHER EMBO EVENTS

- 2009 EMBO/EMBL Science & Society Conference
Food, sustainability and plant science: a global challenge
DE – Heidelberg, 6–7 November 2009

Laboratory Management and Advanced Training Courses

- *Conflict*
DE – Leimen (near Heidelberg), 12–14 October
- *EMBO Laboratory Management Courses (for postdocs)*
DE – Leimen (near Heidelberg), 7–9 October
- *EMBO Laboratory Management Courses (open to all independent scientists)*
DE – Leimen (near Heidelberg), 14–17 September
- *EMBO Laboratory Management Courses in Cambridge, UK*
(open to all independent scientists)
UK – Cambridge, 10–13 November

For more information and list of all courses, workshops and conferences, (January–December 2009) please go to:

- www.embo.org/events/calendar.html

Bi-annual application deadlines for organizers to apply for EMBO funds



EMBO Courses & Workshops

Euro Gold 2009

Singapore conference dominated by EMBO Gold Medalists



EMBO Gold Medalists at Euro Gold 2009 in Singapore

→ It was not easy to get on the speaker's list at the Euro Gold 2009 symposium organized in Singapore early May – the programme was dominated by previous winners of the EMBO Gold Medal, the prestigious annual award that recognizes outstanding contributions of young researchers. Twelve of the twenty lecturers were EMBO Gold Medal winners from the last two decades, and 300 visitors listened to their

talks during the three-day meeting. Their presentations covered a range of topics in developmental and cell biology, highlighting cutting edge research into the molecular control of various biological processes. Contributions from prominent Singapore-based scientists complemented the talks. "We hope that the intellectual discourse and exchange of ideas will foster new collaborations between our institute and European scientists that will lead ultimately to ground-breaking solutions for existing clinical problems," said *Philip Ingham*, main coordinator of the symposium and Deputy Director at the Singapore-based Institute of Molecular and Cell Biology (IMCB).

◀ *Lim Chuan Poh* (middle), chairman of the host institute, accompanied by *Jim Smith* and *Phil Ingham*, the meeting co-organizer (right)

EMBO Gold Medalists who spoke at the Singapore symposium:

- **Dario Alessi**
- **Konrad Basler**
- **James Briscoe**
- **Enrico Coen**
- **Matthew Freeman**
- **Carl-Hendrik Heldin**
- **Christof Niehrs**
- **Paolo Sassone-Corsi**
- **Jim Smith**
- **Patrick Stragier**
- **Richard Treisman**
- **Erwin Wagner**



EMBO Poster Prize competition

Recognizing young researchers



Congratulations to the winners of the competitions held at recent EMBO-sponsored workshops:

→ Virginia Sanchez

Escuela Nacional de Medicina y Homeopatía, Mexico City, Mexico

Differential gene expression during programmed cell death in *Entamoeba histolytica*: identification of apoptotic cell signals.

(Virginia Sanchez Monroy, Ma. Olivia Medel Flores, José D'artagnan Villalba, Consuelo Gómez and D. Guillermo Pérez Ishiwara, National Polytechnic Institute. México.)

EMBO World Workshop, *Amoebiasis: Molecular approaches in an important but neglected disease*, Guanajuato, Mexico, 24–27 February 2009

→ Jennifer Hiras

University of Delaware, Newark, USA

***Chlorobium tepidum* thiol metabolism: Significant extracellular pools of thiols exist and thiol pool sizes are altered by sulfur oxidation defects.**

EMBO-FEMS Workshop, *Microbial sulfur metabolism*, Tomar, Portugal, 15–18 March 2009

→ Sunil Kumar

Golm, Germany

Global and transcript-specific regulation of protein synthesis in *Arabidopsis thaliana* and *Chlamydomonas reinhardtii* in response to environmental stimuli.

EMBO Conference Series (2nd in a series), *Frontiers of plant research*, Cadiz, Spain, 6–9 May 2009

Down Under exchange

EMBL Australia after one year

As of March 2008, Australia became the first associate member state of the European Molecular Biology Laboratory (EMBL), the sister organization of EMBO. The associate membership will initially last seven years and is expected to facilitate the exchange of expertise, resources, services and innovation between the molecular biology communities on both continents. Australia's associate membership is financed by the Australian National Collaborative Research Infrastructure Strategy (NCRIS) and leading Australian research institutions: Monash University, The University of Western Australia, The University of Queensland, The University of Sydney and the Commonwealth Scientific and Industrial Research Organisation.

The first fifteen months have shown a keen scientific exchange between the northern and the southern hemisphere. EMBL Australia, headed by EMBO Member *Nadia Rosenthal*, developed a scientific programme that sets the agenda for the period of the seven-year membership. Consistent with the EMBL philosophy, it focuses on scientific excellence.

One of the goals is the establishment of a Partner Laboratory Network of young Australian research groups benefiting from the EMBL model of secured funding during a fixed term contract. The network will for example support a joint system of state-of-the-art core facilities and services. Funding for the Partner Laboratory Network will be provided by the EMBL Australia Council modelled along EMBL lines.

In March 2009, EMBL Australia hosted "Bioinformatics for the Future", a series of workshops and seminars headed by *Ewan Birney*, Senior Scientist at EMBL-EBI. Ewan toured Australia, meeting with members of the bioinformatics research community, politicians, and key government and industry decision-makers.

The appointment of *Marcus Heisler* as the first Group Leader in the Joint Faculty Development Programme is another



step towards a better integration of Australian scientists into EMBL research and culture. He will spend five years at EMBL Heidelberg and then move on to an Australian institute for another four years.

Touring Australia: Ewan Birney (2nd from left) with Paul Bonnington (left) from the Monash University, Mark Ragan from The University of Queensland and Nadia Rosenthal, head of EMBL Australia

To find out more about the activities of EMBL Australia, take a look at the recently launched website www.emblaustralia.org



Attracting scientists back home

EU grant for Hungarian Centre of Excellence

Better integration into the European research landscape and a top-tier team – this is what the Research Centre for Molecular Medicine (RCMM) of the University of Debrecen, Hungary, strives for. In May this year, the European

Commission awarded the institute a one million euro grant to raise its profile and competitiveness – highly appreciated support in the current financial crisis. Being one of the biggest biomedical research institutes in east-

ern Hungary, RCMM was recognized by the European Commission as a Regional Centre of Excellence back in 2002. The additional cash injection will allow the scientists to strike new partnerships and increase the transfer of technology. RCMM's present partners are the European Molecular Biology Laboratory (EMBL) and the German Cancer Research Center (DKFZ), both based in Heidelberg, Germany. "We will use the money to upgrade our research equipment and win back experienced Hungarian scientists from abroad," said *László Nagy*, EMBO Member and project coordinator. Presently, the institute has four senior and four junior positions to offer. With the new staff on board, RCMM plans to concentrate on three key scientific areas: genomics and personalized medicine, advanced imaging and high-throughput screening.

More information at: www.rcmm.dote.hu



◀ Picturesque location: the Research Centre for Molecular Medicine in Debrecen

Setting the stage for science

European Researchers' Night in Portugal

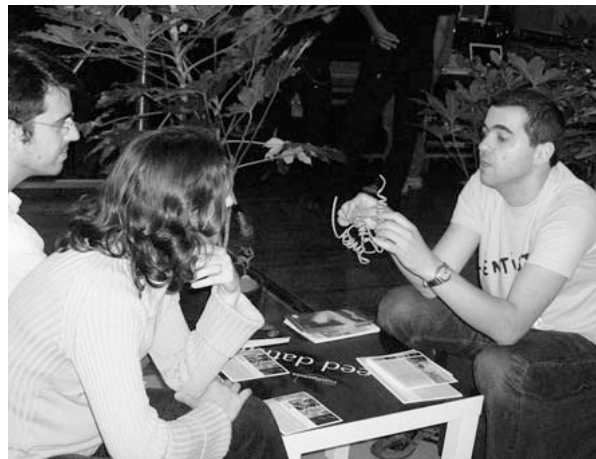
Portuguese science across all areas needs more young, promising talents willing to stay in the country, strengthen its infrastructure and raise the profile of its research institutes. To promote science and encourage young adults to embark on research careers, a range of renowned scientific institutes annually take part in the European Researchers' Night, an EU supported and Europe-wide event, where researchers and the general public get the opportunity to informally get together and talk. In Portugal, they will meet through theatre this year. "Setting the Stage" is a series of theatre performances specifically produced for Researchers' Night on 25 September, expected to attract thousands of visitors in four major Portuguese cities. The project is coordinated by the Instituto Gulbenkian de Ciência, headed by EMBO Member *Antonio Coutinho*. It is also supported by the Institute of Molecular Medicine and the Institute for Molecular

and Cell Biology, headed by EMBO Members *Maria do Carmo Fonseca* and *Claudio Sunkel*, respectively.

The night will be all about engaging in the reality of being a researcher through fun and entertainment: the programme includes speed-dating with scientists, sci-art installations, experiments for people of all ages and concerts by scientists' bands. Researchers and theatre people are developing a series of plays about what they experience in the lab: their excitements, the limits of their research, their

disappointments. For this one night only, professors, postdocs and predocs will exchange their lab coats for stage costumes to act in the performances. The event this year will also mark two important scientific dates: the 400th anniversary of Galileo's first use of the telescope and the 200th anniversary of Darwin's birth.

Speed-dating with scientists (*right*) and hands-on activities for students were the highlights at last year's Researchers' Night



EDITOR PICKS – EMBO PUBLICATIONS

In each issue of *EMBOencounters*, the editors of *The EMBO Journal*, *EMBO reports*, *Molecular Systems Biology* and *EMBO Molecular Medicine* highlight particularly interesting papers.



research articles

Noc protein binds to specific DNA sequences to coordinate cell division with chromosome segregation

Wu LJ, Ishikawa S, Kawai Y, Oshima T, Ogasawara N, Errington J
EMBO J (AOP, 4 June 2009)
doi:10.1038/emboj.2009.144

Crystal structure and association behaviour of the GluR2 amino-terminal domain

Jin R, Singh SK, Gu S, Furukawa H, Sobolevsky AI, Zhou J, Jin Y, Gouaux E
EMBO J (AOP, 21 May 2009)
doi:10.1038/emboj.2009.140

The deubiquitinases USP33 and USP20 coordinate 2 adrenergic receptor recycling and resensitization

Berthouze M, Venkataramanan V, Li Y, Shenoy SK
EMBO J (AOP, 7 May 2009)
doi:10.1038/emboj.2009.128

BubR1 acetylation at prometaphase is required for modulating APC/C activity and timing of mitosis

Choi E, Choe H, Min J, Choi JY, Kim J, Lee H
EMBO J (AOP, 30 April 2009)
doi:10.1038/emboj.2009.123

Screen for DNA-damage-responsive histone modifications identifies H3K9Ac and H3K56Ac in human cells

EMBO Open
Tjeertes JV, Miller KM, Jackson SP
EMBO J (AOP, 30 April 2009)
doi:10.1038/emboj.2009.119

S5a promotes protein degradation by blocking synthesis of nondegradable forked ubiquitin chains

Kim HT, Kim KP, Uchiki T, Gygi SP, Goldberg AL
EMBO J (AOP, 23 April 2009)
doi:10.1038/emboj.2009.115

www.embojournal.org



scientific reports

Human U1 snRNA forms a new chromatin-associated snRNP with TAF15

EMBO Open
Jobert L, Pinzón N, Van Herreweghe E, Jády BE, Guialis A, Kiss T, Tora L
EMBO rep 10: 494–500

RNA-directed DNA methylation requires an AGO4-interacting member of the SPT5 elongation factor family

Bies-Etheve N, Pontier D, Lahmy S, Picart C, Vega D, Cooke R, Lagrange T
EMBO rep 10: 649–654

reviews

The role of nuclear pores in gene regulation, development and disease

Capelson M, Hetzer MW
EMBO rep 10: 697–705

Induced pluripotent stem cells and the stability of the differentiated state

Colman A, Dreesen O
EMBO rep 10: 714–721

science & society

Research in China

Experiences from 23 years of molecular genetics research in Shanghai
Hennig W
EMBO rep 10: 545–550

Economic (un)natural selection

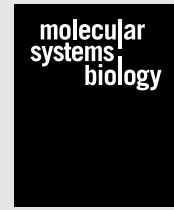
Could the credit crunch 'weed out' weaker research projects, institutes or even countries, improving research quality overall?
Hunter P
EMBO rep 10: 686–688

editorial

Dear Minister

Jacobs H
EMBO rep 10: 533

www.emboreports.org



editorial

Personal phenotypes to go with personal genomes

Snyder M, Weissman S, Gerstein M
Mol Syst Biol 5: 273

reports

Bistability coordinates activation of the EGFR and DPP pathways in *Drosophila* vein differentiation

Yan SJ, Zartman J, Zhang M, Scott A, Li W, Shvartsman S
Mol Syst Biol 5: 278

Efficient protein depletion by genetically controlled deprotection of a dormant N-degron

Taxis C, Stier G, Spadaccini R, Knop M
Mol Syst Biol 5: 267

How selection affects phenotypic fluctuation

Ito Y, Toyota H, Kaneko K, Yomo T
Mol Syst Biol 5: 264

articles

Prediction and validation of a mechanism to control the threshold for inhibitory synaptic plasticity

Kitagawa Y, Hirano T, Kawaguchi S
Mol Syst Biol 5: 280

Predicting and controlling the reactivity of immune cell populations against cancer

Oved K, Eden E, Akerman M, Noy R, Wolchinsky R, Izhaki O, Schallmach E, Kubi A, Zabari N, Schachter J, Alon U, Mandel-Gutfreund Y, Besser MJ, Reiter Y
Mol Syst Biol 5: 265

A systems approach to prion disease

Hwang D, Lee IY, Yoo H, Gehlenborg N, Cho JH, Petritis B, Baxter D, Pitstick R, Young R, Spicer D, Price ND, Hohmann JG, Dearmond SJ, Carlson GA, Hood LE
Mol Syst Biol 5: 252

www.molecularsystemsbiology.com

Alternative splicing network visits Assisi

Annual meeting headed by EMBO Member Reinhard Lührmann

The European Network of Excellence on Alternative Splicing (EURASNET) held its fourth annual meeting at the end of April in the tranquil setting of Assisi, amidst the beautiful Umbrian mountains. EURASNET is headed by *Reinhard Lührmann* – an EMBO Member just like several other group leaders in this network. The annual meeting brings together about forty groups from Europe as well as Israel and Argentina. They regularly get together to discuss the latest developments in alternative splicing and its impact on human diseases.

Highlights of the meeting included the comparison of human and yeast spliceosomal protein composition, which showed that the human spliceosome contained twice as many proteins including SR proteins,

hnRNP proteins, helicases and cyclophilins. *Alberto Kornblihtt's* presentation described how DNA damage relates to changes in alternative splicing and cell death. More than two thirds of the human protein-coding genes undergo alternative splicing, thus changes and misregulation of this mechanism can have severe effects and cause disease. Progress reports were presented for diseases such as spinal muscular atrophy, progeria and frontotemporal dementia.



The high profile scientific advisory board, the attending EU representative *Christina Kyriakopoulou*, and external reviewers expressed their satisfaction with the progress in research, networking and public activities. A magnificent tour of Assisi completed the meeting and the Franciscan message of peace and tolerance cleared our heads and minds.

Interested in scientific highlights, meetings and basic understanding of alternative splicing? Visit our homepage:

www.eurasnet.info/

The medieval city of Assisi was the backdrop of this year's EURASNET meeting

Andrea Barta

Prof. of Biochemistry

Max F. Perutz Labs

Medical University of Vienna, AT

EDITOR PICKS – EMBO PUBLICATIONS

EMBO Molecular Medicine

bridge the gap

RNAi based therapeutics – current status, challenges and prospects

Tiemann K, Rossi JJ

EMBO Mol Med **1(3)**: 142–151

reviews

PINK1 function in health and disease

Deas E, Plun-Favreau H, Wood NW

EMBO Mol Med **1(3)**: 152–165

Jamming bacterial communication: New approaches for the treatment of infectious diseases

Njoroge J, Sperandio V

EMBO Mol Med **1(4)**:

doi 10.1002/emmm.2009.00032

research articles

Heterochromatin protein 1 α a hallmark of cell proliferation relevant to clinical oncology

De Koning L, Savignoni A, Boumendil C, Rehman H, Asselain B, Sastre-Garau X, Almouzni G

EMBO Mol Med **1(3)**: 178–191

Integrative genomic analyses of neurofibromatosis tumors identify SOX9 as biomarker and survival gene

Miller SJ, Jessen WJ, Mehta T, Hardiman A, Sites E, Kaiser S, Jegga AG, Li H, Upadhyaya M, Giovannini M, Muir D, Wallace MR, Lopez E, Serra E, Neilsen GP, Lazaro C, Stemmer-Rachamimov A, Page G, Aronow BJ, Ratner N

EMBO Mol Med **1(4)**:

doi 10.1002/emmm.200900027

The 28-amino acid form of an APLP1-derived A-like peptide is a surrogate marker for A42 production in the central nervous system

Yanagida K, Okochi M, Tagami S, Nakayama T, Kodama TS, Nishitomi K, Jiang J, Mori K, Tatsumi S, Arai T, Ikeuchi T, Kasuga K, Tokuda T, Kondo M, Ikeda M, Deguchi K, Kazui H, Tanaka T, Morihara T, Hashimoto R, Kudo T, Steiner H, Haass C, Tsuchiya K, Akiyama H, Kuwano R, Takeda M

EMBO Mol Med **1(4)**:

doi 10.1002/emmm.200900026

www.embomolmed.org

EMBO congratulates!

UK Royal Society and US National Academy of Sciences

A number of EMBO Members joined the ranks of the Royal Society in the UK and the US National Academy of Sciences this year:

Royal Society fellows

- David Moore Glover
- Brian Arthur Hemmings
- Christine Elizabeth Holt
- Dimitris Kioussis
- Jesper Qualmann Svejstrup
- Roger Kornberg (Foreign Member)

Foreign Associates of the National Academy of Sciences

- Pascale Cossart
- Ari Helenius
- Glauco Tocchini-Valentini
- Harald zur Hausen
- Detlef Weigel (Member)

European Research Council (ERC) Advanced Grants

Forty-two EMBO Members and Young Investigators, almost half of the total of ninety recipients, were awarded European Research Council (ERC) Advanced Grants:

European Research Council (ERC) Advanced Grants

- Rudolf Aebersold
- Diego Sebastian Amigorena
- Johan Henri Auwerx
- Naama Barkai
- Konrad Basler
- David Baulcombe
- Maria A. Blasco
- Johannes Carolus Clevers
- Pascale Cossart
- Giulio Cossu
- Caroline Dean

European Research Council (ERC) Advanced Grants (cont.)

- Barry Dickson
- Denis Duboule
- Jean-Marc Egly
- Pierre Gönczy
- Ingrid Grummt
- Ari Helenius
- Jan Hendrik Jozef Hoeijmakers
- Carlos Ibáñez
- Howard T. Jacobs
- Jonathan Jones
- Thomas Langer
- Bruno Lemaître
- Alberto Mantovani
- Marcel Méchali
- Andrea Musacchio
- Josef Martin Penninger
- Benedita Rocha
- Philippe Sansonetti

- Ben J.G. Scheres
- Luis Serrano
- Manuel Serrano
- Brigitta Stockinger
- Jussi Taipale
- Gunnar von Heijne
- Erwin F. Wagner
- Harald Alfred Stenmark *
- Giacomo Cavalli*
- Mart Saarma*
- Kari Kustaa Alitalo*

* on reserve list

AWARDS OF EXCELLENCE

EMBO Members

Austrian Decoration of Honour of Science and Art
Gottfried Schatz was honoured with the Austrian Decoration of Honour of Science and Art – the highest award of its kind in Austria. Gottfried Schatz was EMBO Secretary General from 1984 to 1989 and played a leading role in elucidating the biogenesis of mitochondria. He was also the co-discoverer of mitochondrial DNA.

French Academy of Sciences

Jean Dénarié was elected to the French Academy of Sciences in December 2008. The academy, founded 1666 by Louis XIV, brings together the most eminent French and foreign scholars to form associations, playing an active role in the development of international scientific relations.

Prix de la science se livre

General Council of the Hauts-de-Seine
Bertrand Jordan was awarded this 2001 established prize for his 2008 published book entitled *Plural Humanity: Genetics and "Race"*.

University of Athens (Greece)

Pierre Chambon has been granted the title Doctor *Honoris Causa* of the University of Athens in May 2009.

EMBO Installation Grantee

Best research project in Brain Dementia and Alzheimer's Disease
Portuguese Society for Neuroscience/Pfizer
In collaboration with Pfizer, the Portuguese Society for Neuroscience offers an annual prize of 15,000 euro for the best research project in Brain Dementia and Alzheimer's disease. This year's winner is **Tiago Outeiro** who received the prize for his work entitled *SirT2 as a Target in Aging and Lewy Body Diseases*.

EMBO/HHMI Startup Grantee

Wellcome Trust International Senior Research Fellowship
Wellcome Trust (UK)
Attila Mócsai from the Semmelweis University School of Medicine in Budapest, Hungary, was awarded the Wellcome Trust International Senior Research Fellowship. This scheme supports outstanding researchers, either medically qualified or science graduates, who wish to establish a research career in an academic institution in selected European countries – Croatia, Czech Republic, Estonia, Hungary, Poland, Slovakian Republic and Slovenia.

EMBO Fellow

INSA Medal for Young Scientist
Indian National Science Academy
Kalika Prasad from Utrecht University in the Netherlands has been awarded this medal by the Council of the Indian National Science Academy for his key contributions to understanding transcription regulation of rice flowering. His approach to functional genomics sheds new light on regulation of rice flowering and plant architecture, according to the selection committee.

Bi-annual application deadlines

15 February	15 August
EMBO Fellowships	

A GOOD READ – PUBLICATIONS FROM THE EMBO COMMUNITY

articles

Bacteria as computers making computers

Antoine Danchin (EMBO Member)
FEMS Microbiol Rev **33**: 3–26
(January 2009)

Real-time imaging of *Leishmania mexicana*-infected early phagosomes: a study using primary macrophages generated from green fluorescent protein-Rab5 transgenic mice

Christoph Lippuner (EMBO Fellow) *et al.*
FASEB J **23**: 483–491
(February 2009)

Somatic mutations of the histone H3K27 demethylase gene UTX in human cancer

Gijs van Haften (EMBO Fellow) *et al.*
Nat Genet **41**: 521–523
(29 March 2009)

Syk kinase signalling couples to the Nlrp3 inflammasome for anti-fungal host defence

Catherine Dostert (EMBO Fellow) *et al.*
Nature **459**: 433–436
(1 April 2009)

T cell antigen receptor signalling and immunological synapse stability require myosin IIA

Tal Ilani (EMBO Fellow) *et al.*
Nat Immunol **10**: 531–539
(6 April 2009)

(+)-7-iso-Jasmonoyl-L-isoleucine is the endogenous bioactive jasmonate

Andrea Chini (EMBO Fellow) *et al.*
Nat Chem Biol **5**: 344–350
(6 April 2009)

A common variant on chromosome 11q13 is associated with atopic dermatitis

Jorge Esparza-Gordillo (EMBO Fellow) *et al.*
Nat Genet **41**: 596–601
(6 April 2009)

The regulated retrotransposon transcriptome of mammalian cells

Nadine Hornig (EMBO Fellow) *et al.*
Nat Genet **41**: 563–571
(19 April 2009)

The transcriptional landscape of *Listeria* from saprophytism to virulence

Alejandro Toledo-Arana (EMBO Fellow) *et al.*
Nature **459**: 950–956
(17 May 2009)

Persistent transcription-blocking DNA lesions trigger somatic growth attenuation associated with longevity

Bjoern Schumacher (EMBO Fellow) *et al.*
Nat Cell Biol **11**: 604–615
(May 2009)

Hexameric assembly of the proteasomal ATPases is templated through their C-termini

Jeroen Roelofs (EMBO Fellow) *et al.*
Nature **459**: 866–870
(11 June 2009)

Chaperone-mediated pathway of proteasome regulatory particle assembly

Jeroen Roelofs (EMBO Fellow) *et al.*
Nature **459**: 861–865
(11 June 2009)

T lymphocytes dampen innate immune responses through inhibition of NLRP1 and NLRP3 inflammasomes

Catherine Dostert (EMBO Fellow) *et al.*
Nature **460**: 269–273
(3 June 2009)

A soma-to-germline transformation in long-lived *C. elegans* mutants

Christian G. Riedel (EMBO Fellow) *et al.*
Nature **459**: 1079–1084
(7 June 2009)

Cells need safety valves

Antoine Danchin (EMBO Member)
Bioessays **31**: 769–773
(July 2009)

Epidermal growth factor-like domain 7 (EGFL7) modulates Notch signalling and affects neural stem cell renewal

Mirko H.H. Schmidt (EMBO Fellow) *et al.*
Nat Cell Biol **11**: 873–880
(July 2009)

Partial penetrance facilitates developmental evolution in bacteria

Avigdor Eldar (EMBO Fellow) *et al.*
Nature (AOP, 5 July 2009)
doi: 10.1038/nature08150

books

RNA Polymerases as Molecular Motors

Henri Buc (EMBO Member) and
Terence Strick (EMBO Young Investigator)
RSC Biomolecular Sciences
ISBN: 978-0-85404-134-3
(April 2009)

Protein Misfolding in Biology and Disease

Tiago Outeiro (EMBO Installation Grantee)
Research Signpost
ISBN: 978-8-17895-345-8
(2009)

Petita història dels humans

Jordi Casanova (EMBO Member)
Edicions La Campana
ISBN: 978-8-49673-531-6
(May 2009)

TRANSITIONS

EMBO Members

George Thireos has recently joined the Biomedical Research Foundation of the Academy of Athens after his fifteen-year tenure as the Director of the Institute of Molecular Biology and Biotechnology in Crete, Greece. His main task at his new post is to create a new Center for Systems Biology – the first organized effort of this kind in Greece. The Biomedical Research Foundation of the Academy of Athens houses activities in both basic and clinical research and offers an ideal setting for the translation of a systems biology initiative into health related practices.

EVENTS

EMBO Members

EMBO Member **Olivier Schwartz** is organizing the international meeting **Frontiers of retrovirology: Complex retroviruses, retroelements and their hosts** in Montpellier, France from 21–23 September 2009. This conference will bring together leading human retrovirus researchers to review current progress and to chart future challenges. More information at:
www.amiando.com/frontiersofretrovirology.html

Online registration deadline

14
August

The EMBO Meeting
Amsterdam
29 August –
1 September 2009

Annual application deadline

15
September

ESF/EMBO
Symposia
in 2011

Next issue:

The next EMBOencounters issue — Winter 2009 — will be dispatched in December 2009. You can send your contributions/news to:
communications@embo.org
at any time.

The deadline for the Winter issue is 30 October 2009.

Editor: Yvonne Kaul

Contributing Editor: Suzanne Beveridge

Proofreading: Meryl Schneider

Print layout, graphics: Uta Mackensen

Web layout: Laura Cortesi,
Sabine Rehberger-Schneider



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© www.hermitage.nl | photos: Roos Adershoff



to discover *ontdekken*



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uitzicht
view

Don't leave Amsterdam after THE EMBO MEETING without

buiten

meester-
masterpieces
werken

binnen

...relaxing in the Rijksmuseum Gardens

The garden by the famous Rijksmuseum is one of the least known sightseeing attractions in Amsterdam. This attractive backyard features beautifully maintained flowerbeds, fountains and also a collection of statues and architectural curiosities.

The 'ruins' in this garden are especially worth mentioning. A collection of building fragments from old-Holland was brought together at the end of the last century from all over the country. The result is a sampling of five centuries of Dutch architecture – everything from Gothic pillars from Edam to 17th century city gates from Groningen. Entrance to the garden is free from Tuesday to Saturday between 10am and 5pm and Sundays and holidays between 1pm and 5pm.



© www.rijksmuseum.nl | photo: Arie de Leeuw

...visiting the Hermitage Amsterdam

Don't miss the opportunity to stop by the satellite branch of the State Hermitage Museum in St. Petersburg – one of the largest and most renowned museums in the world. In June 2009, the spectacular venue opened its current location on the Amstel River with an official visit by Queen Beatrix of the Netherlands and President of the Russian Federation Dmitry Medvedev. The opening exhibition, "At the Russian Court" (20 June 2009 – 31 January 2010), features more than 1,800 objects that illustrate court life of the Russian tsars, including the Romanov throne, jewelry by Fabergé, gala dresses and the last tsarina's grand piano.



© www.hermitage.nl | photo: Roos Aldershof

...trying out Dutch specialties at Hemelse Modder

Heavenly Mud is the literal translation of the name of this informal, stylish and vegetarian-friendly restaurant, located near the Nieuwmarkt on one of Amsterdam's oldest canals. *Hemelse Modder* is a modern establishment with a bright interior and a nice outdoor-area. The menu is very international – Dutch, French, Italian and Oriental cuisine are all represented, as well as regional dishes. The atmosphere makes it a good place for a casual meal. Several fixed-price menus are available daily.

...hanging out on Amsterdam's best roof terrace

Every Summer, NEMO – the largest science centre in the Netherlands – transforms its unusual roof into one of the sunniest roof terraces in the country. The massive forty-eight steps on top of the building designed by Italian architect *Renzo Piano* offer a spectacular view over the whole of Amsterdam. The huge beanbags, lounge chairs, a giant chess set, along with delicious tapas served in the bar, give it a genuine beach feeling. NEMO's roof can be visited free of charge from Tuesday to Sunday between 10am and 5pm.



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SCIENTIFIC ORGANISERS
Hans **CLEVERS** & Stephen **WEST**

www.the-embo-meeting.org
the.embo.meeting@embo.org

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SPECIAL LECTURES

Ronald **PLASTERK** NL
Harald **ZUR HAUSEN** DE
Svante **PÅÅBO** DE
Fotis **KAFATOS** UK
Martin **REES** UK

KEYNOTE LECTURES

Kim **NASMYTH** UK
Peter **RATCLIFFE** UK
Michael **HALL** CH
Rudolf **JAENISCH** US

PLENARY LECTURES

Chromosomes: dynamics,
maintenance & evolution
David **SHERRATT** UK
Titia **DE LANGE** US
Stephen **WEST** UK

Signalling pathways in
development & cancer
Julian **DOWNWARD** UK
Anne **RIDLEY** UK
Elaine **FUCHS** US
Axel **ULLRICH** DE

Stem cells –
Molecular Medicine
Symposium
Fiona **WATT** UK
Shinya **YAMANAKA** JP
Austin **SMITH** UK
Hans **CLEVERS** NL

SUNDAY WORKSHOPS

Small regulatory RNAs
René **KETTING** NL
Elisa **IZAURRALDE** DE

Cell death

Michael **HENGARTNER** CH
Peter **KRAMMER** DE

DNA damage & repair
Stephen **JACKSON** UK
Simon **BOULTON** UK

Structural proteins of
the Golgi

Graham **WARREN** AT
Catherine **RABOUILLE** NL

TOR signalling

Dario **ALESSI** UK
Michael **HALL** CH

Functional genomics

Eran **SEGAL** IL
Jussi **TAIPALE** FI

Innate immunity

Caetano **REIS E SOUSA** UK
Jules **HOFFMANN** FR

MONDAY WORKSHOPS

Trafficking & transport at
cell membranes
Poul **NISSEN** DK
Margaret **ROBINSON** UK

Cell adhesion
& communication
development

Rolf **KEMLER** DE
Elizabetta **DEJANA** IT

Chromatin dynamics,
modification
& gene expression
Tony **KOUZARIDES** UK
Geneviève **ALMOUZI** FR

Proteomics & cell biology
Matthias **MANN** DE
Angus **LAMOND** UK

Protein machines
Dale **WIGLEY** UK
Karl-Peter **HOPFNER** DE

The cell cycle
Tim **HUNT** UK
Karim **LABIB** UK

Zebrafish in the study of
development & disease
Steve **WILSON** UK
Stefan **SCHULTE-MERKER** NL

TUESDAY WORKSHOPS

Host-pathogen interactions
Keith **GULL** UK
Pascale **COSSART** FR

Small GTPases:
from molecules to systems
Johannes **BOS** NL
Dafna **BAR-SAGI** US

Meiotic recombination
Alain **NICOLAS** FR
Lumir **KREJCI** CZ

Lipids & membrane
organisation
Kai **SIMONS** DE
Gerrit **VAN MEER** NL

Nanobiology
Andreas **ENGEL** CH
Nynke **DEKKER** NL

Cell polarity
Jürgen **KNOBLICH** AT
Anne **EPHRUSSI** DE

Protein modification by
SUMOylation & ubiquitylation
Ronald **HAY** UK
Frauke **MELCHIOR** DE

AMSTERDAM
2009
29 AUGUST –
1 SEPTEMBER

DEADLINE
Online registration
14 August

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Food
sustainability
and
plant
science

A global challenge

10th

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University of Freiburg

Hans-Jörg Buhk
Federal Office of Consumer
Protection and Food Safety

Sir Peter Crane
Yale University

Catherine Feuillet
French National Institute for
Agricultural Research

Klaus Hahlbrock
Max Planck Institute for
Plant Breeding Research

Luis Herrera-Estrella
National Polytechnic Institute

Fritz Kuhn
Member of the
German Federal Parliament

Ania Lichtarowicz
BBC World Service

Inmaculada de Melo-Martin
Cornell University

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Gent University

Matin Qaim
University of Göttingen

Pamela Ronald
University of California

Andy Stirling
University of Sussex

Joyce Tait
ESRC Centre for Social and
Economic Research on
Innovation in Genomics

Lothar Willmitzer
Max Planck Institute of
Molecular Plant Physiology

Xue Hong-Wei
Institute of Plant Physiology & Ecology,
Chinese Academy of Sciences

Dani Zamir
The Hebrew University of Jerusalem

6–7 NOVEMBER 2009
EMBL Heidelberg, GERMANY

SATURDAY

SESSION III
Enhancing plants by GM

SESSION IV
Public perception and
risk assessment

CLOSING TALK
Klaus Hahlbrock

FRIDAY

KEYNOTE TALK
Pamela Ronald

SESSION I
Plant breeding and the
maintenance of diversity

SESSION II
Breeding and the molecular
genetics that support it

Registration fee: 40 EUR
Students: 20 EUR
High School
Students: Entrance free

CONTACT
EMBO Science & Society
scisoc@embo.org

[www.embo.org](http://www.embo.org/events)
/events