

New Partnership in Fusion Research

The Max Planck Society is intensifying its commitment to the development of sustainable energy supplies with the foundation of the Max Planck Princeton Research Center for Plasma Physics



Shirley M. Tilghman, President of Princeton University, and Peter Gruss, President of the Max Planck Society, in the Trustee Room, East Pyne Hall.

On March 29, 2012, on the campus of Princeton University, Princeton President Shirley M. Tilghman and the President of the Max Planck Society, Peter Gruss, jointly signed the agreement to set up the new Center. "Particularly in the field of fusion research, it is essential that we pool our strengths, as well as our knowledge," President Gruss emphasized, "if, in the coming years, we want to develop nuclear fusion to provide what the world so urgently needs: a safe, clean and dependable energy technology."

The Max Planck Institute for Plasma Physics in Garching and Greifswald (IPP) is partnering with the Princeton Plasma Physics Laboratory (PPPL) in the field of fusion research. In the field of astrophysical plasmas, the Max Planck Institutes for Solar System Research (Katlenburg-Lindau) and Astrophysics (Garching) will be working together with the Faculty of Astrophysics at Princeton University. "The goal of this joint venture is to make greater use of the synergies between fusion research and the work of our astrophysicists," said Sibylle Günter, Director at the IPP. The results of the joint investigations into fusion and astrophysical plasmas will be used to develop theoretical models, furthering the study of fusion power and its practical application as an energy source.

Photos: Eleanor Starkman (top), fotolia (small photo)

A Test for Risk-Takers

Scientists at the Max Planck Institute for Human Development present a new tool to assess risk competence

How well do we understand the risks that we face in our day-to-day lives? Are we able to correctly assess statistical information and the pros and cons of important decisions – for example, when investing money or considering radical medical treatment? Scientists at the Max Planck Institute for Human Development in Berlin, in cooperation with Michigan Technological University and the University of Granada, have now developed the "Berlin Numeracy Test." Their studies

show that this test is twice as accurate in predicting risk competence as other commonly used tests.

The "Berlin Numeracy Test" is a cogent new instrument that rapidly delivers a valid prognosis of an individual's ability to comprehend statistics and risks. In 21 studies involving more than 5,000 participants from 15 countries, the scientists have shown their numeracy test to be the most powerful indicator to date in identifying the ability to understand nu-

How risk-competent are you?

merous day-to-day risks (for example in connection with medical diagnoses and drug treatments) or statistical probabilities (such as weather forecasts). It has proven to be twice as meaningful as widespread cognitive tests.

This easy-to-use tool is available to all interested parties at www.riskliteracy.org.



“We need to explain the benefits of transgenic animals”

Guy Reeves on genetically modified insects

For some years now, genetically modified insects have been released into the environment in various countries across the world. The laboratory creatures are intended to prevent their counterparts in the wild from multiplying, as a means of combating infectious diseases and agricultural pests. Guy Reeves of the Max Planck Institute for Evolutionary Biology in Plön has been taking a close look at these transgenic animal release trials.

What sort of genetically modified insects have been released into the environment so far?

Guy Reeves: In the US, there have been releases of transgenic pink bollworms – a species of moth that causes great damage to cotton plantations – since 2005. And transgenic male yellow fever mosquitoes, a species that can also carry dengue fever, have been released in Malaysia, Brazil and on the Cayman Islands since 2009. All of these creatures were either infertile or equipped with a suicide gene that resulted in the bulk of the larvae dying. When these creatures mate with their counterparts in the wild, the numbers of offspring with the ability to survive are low and the mosquito population declines. The mosquitoes from the laboratory can't reproduce in the long term and automatically die out.

What uses do such creatures have?

Transgenic insects can be a weapon in the fight against infectious diseases, particularly those for which there is still no vaccine available, such as dengue fever. In agriculture, the technology can be used to combat certain pests, so farmers have less need for pesticides. On the other hand, no results have yet been published showing whether transgenic creatures are more powerful in decimating natural populations than the infertile irradiated mosquitoes that have been released worldwide for some 60 years now. So we don't yet know whether this technology is more effective than the traditional radiation method.

There is much talk in the media about “Frankenstein mosquitoes.” How would you answer the question of whether genetically modified insects can sting?

Yes, it's possible – people really could be stung by transgenic mosquitoes. The idea is to release exclusively males, which, in contrast to the females, don't feed on blood. But the technology is not one hundred percent reliable, so about 0.5 percent of the millions of mosquitoes released are female. What's more, the transgenic creatures are not entirely infertile as claimed – between 2 and 4 percent of their offspring survive. Given that millions of such mosquitoes have already been released in populated areas, it must be assumed that there are some genetically modified females among them. It is unknown whether the sting of a transgenic mosquito can have consequences in terms of health.

Why are such issues not clarified before transgenic insects are released?

I suspect that it is in order to avoid controversy. Although a lot of scientists who, like me, work in this field do consider this to be extremely short-sighted. It's alarming that the world's first release trial involving transgenic insects took place in one of the few countries in the world with no laws on this issue – on the Cayman Islands. Then again, this technology is relatively low-risk.

What is the legal situation in the European Union?

The EU is currently revising its guidelines. During the course of this year, the European Commission will be initiating a public consultation on the release of genetically modified insects. Citizens, companies and organizations with an interest in this issue or who have specialist knowledge will be able to participate in drafting regulations. I would hope that a broad cross-section of the public will take part in the discussion. The British government is currently looking at an application from British company Ox-



Guy Reeves.

itec to release transgenic cabbage moths in Great Britain. It can't be ruled out that this trial may take place before the new EU rules are in place. It's still a little early to make predictions, but there are encouraging signs that future release trials involving transgenic insects will be carried out on a scientifically sound and transparent basis in the EU.

Following the release of genetically modified mosquitoes on the Cayman Islands, some of the local population felt that they had been taken advantage of as guinea pigs to try out new technology. Do you understand their concerns?

In view of the poor information policy, this impression is hardly surprising. I would probably feel the same way myself – particularly since the population of the Cayman Islands has thus far had no lasting benefit from the trials.

Why is it so important that the local population be made fully aware in advance of a release trial?

People will accept this technology only if we precisely explain the benefits and risks of transgenic insects to those directly concerned. If we fail to do so, the technology itself is doomed to failure. You mustn't forget that you can refuse a drug or a vaccine – but when genetically modified insects are released in your neighborhood, you can't get away from them.

Interview: Harald Rösch

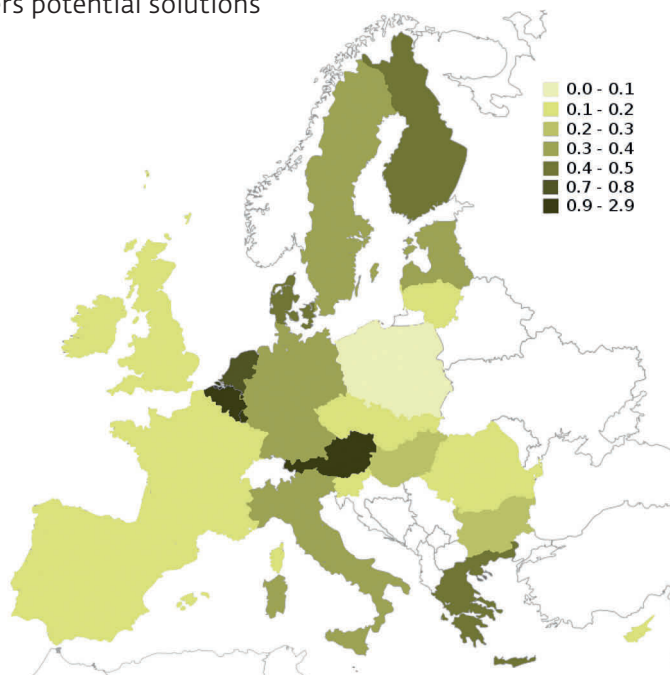
Europe's Courts under Pressure to Reform

The European Court of Justice is facing huge challenges – a study by the Max Planck Institute for Private Law in Hamburg reveals the reasons and offers potential solutions

Whether you're buying a car, booking a holiday or considering credit, there are few transactions nowadays to which the law of the European Union does not extend. Not just cross-border transactions, but also internal domestic legal relationships are subject to a host of directives and regulations that define the rights of consumers and businesses. The decision as to which party prevails in a dispute is increasingly dependent on the European Court of Justice (ECJ) in Luxembourg, which guarantees the enforcement of European law within the EU.

However, the ECJ is faced with great challenges: "With the dramatic increase in caseload, the extended time needed for cases to be heard, as well as a significant extension to its mandate, the European Court of Justice is reaching the limits of its capacity in some areas," says Hannes Rösler, a staff member at the Max Planck Institute for Private Law in Hamburg. For example, since the first case was referred in 1961, the number of preliminary rulings has increased from 1 to 385 in 2010. At the same time, the number of petitions to all three EU courts in 2010 climbed to 1,406 – "the highest number in the history of the Court. With the exception of the European Court of Human Rights, the Court of Justice has the highest workload of all international courts," Rösler continues. The average of 17 months to hear each case also presents problems. "With the time taken by national courts as well, it is not unusual for a case in Germany to last four years or even longer," Rösler calculates. Which is too long, say the critics.

According to Hannes Rösler, the only way out of the mire is through reform. A form of judicial federalism must be developed between member states and the European courts. Above all, structural reform needs to be implemented to create a new European judicial architecture. In turn, this would



Some EU member states rarely refer cases, while others do so with increasing frequency. Judges in Austria involve their colleagues in Luxembourg with particular regularity.

require the Court of Justice to develop specialization in the relevant disciplines. Moreover, European justice must be more approachable for ordinary citizens, to enable, them within certain limits – in a departure from the past – to appeal directly to the Court of Justice. The long-term goal in Rösler's view should be a new, codified system of European procedural law and conflict-of-law rules that will make it simpler to bring cases to trial before foreign courts and the ECJ.

Research on the Move

The new iPhone app offers up-to-date reports, podcasts and videos, as well as an interactive timeline on the history of the Max Planck Society and the Kaiser Wilhelm Society

The arrival of the MaxPlanckApp heralds a new information channel that combines the topicality of the website with the principle of mobility: "Whether you're on a train or in a café, if you're interested in the research being carried out at Max Planck institutes, you can now download current reports directly onto your phone, and even check the loca-

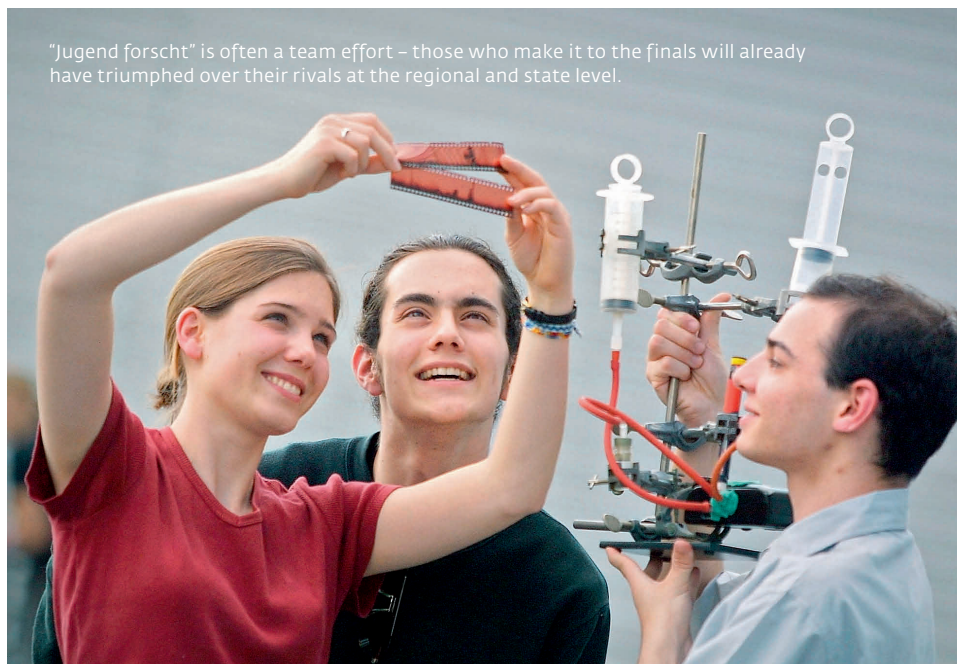
tion of an institute via Google Maps," says Christina Beck, who heads the Department of Press and Public Relations. Such apps are particularly popular with school and university students who have forsaken traditional Internet access via PCs and laptops in favor of smartphones. All of the articles can be quickly forwarded to friends via e-mail.



More Prizes for the Competition “Jugend forscht”

Starting in 2012, the Max Planck Society is donating all of the physics prizes from the regional level up to the national competition

The junior research competition “Jugend forscht” began in 1965. This broad-based initiative to encourage junior researchers was launched by Stern magazine editor-in-chief Henri Nannen with the declared aim of “finding the researchers of tomorrow.” The model was borrowed from the US, where science fairs have a long tradition. Young people come to the fair to present their research projects and inventions to a broad audience, as well as to an expert jury that decides on the awards. Nannen quickly found some willing partners for the German initiative. Several companies agreed to sponsor the competitions in individual states. The Max Planck Society has been involved as a prize donor since the 1970s – and recently agreed to fund all five biology prizes at the national level. This year, just under 6,000 projects came up for inspection by the jury and the public. More than 10,000 budding scientists took part in Germany’s most famous junior research contest in 2012. The national finals were held this year from May 17 to 20 in Erfurt.



“Jugend forscht” is often a team effort – those who make it to the finals will already have triumphed over their rivals at the regional and state level.

On the Net



Ripples in Space

Albert Einstein predicted their existence in the last century, but held their discovery to be impossible. However, that hasn’t stopped astronomers like Karsten Danzmann from looking for them: gravitational waves. Scientists in Hanover are using the GEO 600 detector to track down the rippling waves. So far, they haven’t succeeded. But their work – on the frontiers of modern physics – is nevertheless exciting. The latest Max Planck German-language film takes a look over their shoulders and graphically explains the significance of these ripples in space-time, and why they might one day open up a new perspective on the cosmos.
www.mpg.de/5598262/gravitational_waves

Horizons in Molecular Biology

Registration for the 9th “Horizons in Molecular Biology” international PhD student symposium is now open. This year, students will bring together 23 speakers – among them Nobel laureate Kurt Wüthrich, synthetic biologist Drew Endy and ribozyme specialist Ronald Breaker – talking about very different areas of research, from RNA structure to viral evolution, from synapses to plant stomata. At the preceding career fair, students can gain insights into career opportunities outside of academia. The symposium will take place from October 8th to 11th 2012 in Göttingen, Germany.
www.horizons.uni-goettingen.de

Justice in Conflict

Few YouTube videos have gone viral quite as dramatically as “Kony 2012,” which has been viewed almost 100 million times. It marked the start of a campaign aimed at bringing Ugandan war criminal Joseph Kony to justice. Patrick Wegner, a doctoral student at the Max Planck Institute for Comparative Public Law and International Law in Heidelberg, spent three months conducting research in Uganda in 2011. In his blog “Justice in Conflict,” he gives a detailed description of human rights breaches in crisis regions, as well as taking a critical look at the rights (and wrongs) of the Kony 2012 campaign.
www.justiceinconflict.org/author/patrickwegner