(c) by Hannes Schmidt

VOLUME 2 ISSUE 1 January 2010

maX

The PhD student newsletter of the MDC

Happy New Year

First Issue of maX in 2010

An essential task:
Insight into the MDC's central store and goods receiving dept.

Interview with Nenad Ban

HELMHOLTZ GRADUATE SCHOOL Molecular Cell Biology

MDC MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN BERLIN-BUCH
IN DER HELMHOLTZ-GEMEINSCHAFT e.V.

EDITORIAL

In this issue / NCE

It is the coldest winter in over twenty years. Many non-German scientists at the MDC are experiencing a shocking couple of weeks, and even the locals had to take out their best winter gear. Meanwhile, Vancouver B.C., which is hosting the Winter Olympic Games this year, remains sunny and without snow. This is how we say goodbye to the 2000s, a decade that brought us not only discussions about global warming or airport security, but also groundbreaking scientific discoveries, from the resolution of the structure of the ribosome (see the interview with Nenad Ban on page 3) to the derivation of induced pluripotent stem cells.

2010 is an important year for Science in Berlin, as five of its oldest and most acclaimed institutions celebrate their anniversaries. The Humboldt University and the Charité celebrate 200 and 300 years respectively since their foundation. The city has put together an online portal:

http://www.wissenschaftberlin2010.de/

There you can find information on the science done in Berlin, as well as a calendar with the special events of the year.

There is a lot to look forward to this year! There will be exciting talks, starting with the Queen's Lecture by Sir Martin Evans on February 4th and continuing with the meeting of the International Society for Transgenic Technologies at the MDC campus on March 22-24. Don't miss our celebration of the Chinese New Year on campus (February 12th), and put in your calendar the dates for the different PhD retreats (see page 11).

Meanwhile, keep the Winter Blues away by curling up with this new maX issue and a cup of tea on your favorite couch. It comes loaded with ideas to make you remember that, even in the winter, Berlin and the MDC have a lot to offer. Discover a new delicious (and affordable!) restaurant, go to a sauna with views to the Spree (see the HotSpots on page 18) or join Chris on a science-fiction adventure with the new sandwich machine on campus (page 2). In any case, you have already survived Blue Monday (page 14), statistically the most depressing day of the year, so from now on it's all better. When the next maX issue comes out, the campus will be green and the beer hour might already take place outdoors.

Have a good read!

The maX Editorial Team

Nuria Cerdá-Esteban
Sarbani Bhattacharya
Chris Fröhlich

Would you like to be a part of maX?
Do you enjoy writing on scientific topics or general campus news?
Are you a talented graphic designer?
Do you enjoy photography?
We can use your help!!!
maXmoeglich@mdc-berlin.de

Contents

maX is an internal publication of the Max-Delbrück-Centrum für Molekulare Medizin Berlin-Buch, Robert-Rössle-Straße 10, 13125 Berlin. Published quarterly.
Editors-in-chief: Chris Fröhlich (AG Daumke), Nuria Cerdá-Esteban (AG Spagnoli), Sarbani Bhattacharya (AG Selbach)
Artwork: Julia Schuster
Layout: Chris Fröhlich (AG Daumke)
Contact: maXmoeglich@mdc-berlin.de, +4930-94063275

Who is Sarbani ? / CF

The editorial team of maX has a new member. We are proud to present to you Sarbani!
Sarbani Bhattacharya is not what you can call a typical Indian girl. As a trained Indian classic singer, folk dancer and amateur theater actress she could perfectly fit in any Bollywood movie, however she drinks, parties and behaves like a typical Western young woman.
Sarbani was born on an island in the Sundarbaran delta of West Bengal. Sundarbaran means beautiful forest and that's where Sarbani got her first impression of life. She had a 'gypsy' childhood as she moved from one place to another because of her father's job. Probably that's why she is an enthusiastic backpacker and the reason for her wish to "put my little footprints on every continent". However, if you ask Sarbani where she comes from then she will say from Calcutta, the city of joy.
Sarbani studied Biology with special emphasis on Biochemistry at the University of Burdwan in India. During her Master thesis she studied Catfish immune response and the role of GSH-GST conjugate system in combating Lipid Peroxidative damage in the Molecular Toxicology Laboratory in Department of Biotechnology at the Visva Bharati University in India. After she had finished her academic studies she decided to come to Germany where she obtained her doctoral degree for her crystallographic studies on structural and functional investigations of Growth Arrest and DNA Damage (GADD45) proteins in the group of Prof. Dr. Udo Heinemann here at the MDC. It was Matthias Selbach's talk last year about the SILAC technology which aroused Sarbani's interest in the field. So she joined the group in July 2009 to gain a better knowledge and understanding of MS based proteomics. (Check her article describing the research focus of her lab on page 13).
Besides science Sarbani is a voracious book worm, a total movie freak and as mentioned before an enthusiastic backpacker. In her spare time she likes to hang around at Gendarmenmarkt and especially in the summer she likes to listen to the street musicians there while she enjoys a hot chocolate in the local Fassbender and Rausch chocolatier. Though she confesses herself to be a foodie and therefore does not like to label any particular cuisine as her favorite, Kyo - a Japanese restaurant in Mitte seems to have struck a special chord with her. True to her Bengali nature, she is sweet-toothed and especially takes delight in cakes; in her own word – 'anytime is cake time'. Sarbani likes to chill out in Potsdamer Platz where she enjoys a drink or two in the aussie bar Corroboree which she dotes on and indulge in her favored pastime activity – people watching.

We would like to thank our collaborators in this issue:

Janko Brand *(AG Daumke)*
Can Demiroglu *(AG Scheidereit)*
Fabian Hosp *(AG Selbach)*
Marta Slimak *(AG Ibañez-Tallon)*
Katharina Walentin *(AG Schmidt-Ott)*

Need a sandwich ? / CF

Thoughts of a PhD student

For those of you who haven't noticed yet the brand new and fancy vending machines in the stately reception hall of our glorious scientific headquarter Hermann-von-Helmholtz house, go there and grab a coke or a plain Schnitzelbrötchen!
If you don't like such culinary delicacies go there and buy it anyway. It's worth it! The high-tech fully automated robotic food dispenser arm with its Sci Fi sounding servo motors reminds me of model T-800's arm in Terminator (or the automated crystal plate observation machine in the genome house, lovingly called the Homebase). Standing in front of this machine, my everyday sorrows and woes just seem insignificant. I even don't care if I can afford it - I just want to see this spacy arm working!
Therefore I allow myself the luxury of having a break whenever my experiments let me, whenever I feel like taking a Schokopause, whenever I want to. This is academia! This helps me forget that I am only being paid 19.5 hours a week, despite working 50 hours (reading papers, preparing talks and traveling to "Stadtgrenze" not included) and holding a university degree I worked hard for. And the limited contract I will receive when I am a Post-Doc … The main thing is now we have something to eat in the afternoon! The golden deal would be a bed for my stays in the lab during week nights. But I don't want to complain, I may thank my stars for that and while I am at it I thank for being the chosen one, selected for one of our eminently respected graduate programs at the MDC (or my boss should be for saving the money for my position, even if it is only a half one). This is reality and I am really grateful for that! Three cheers for our automated food suppliers! Three cheers for "Pommes" on Friday!
Three cheers for the MDC!

About the Cover

Mouse Marylin
(Warhol inspired treatment of the ΔCNPlacZ-mouse)

Blue color in the 2nd picture from the left of the upper row shows the expression pattern of C-type natriuretic peptide (CNP) in an E12.5 mouse embryo. CNP is a secreted factor essential for a special mode of branching that sensory axons undergo when they reach the spinal cord during development. Axonal branching is a key mechanism in the formation of axonal trajectories that shape the complex wiring pattern of the mature nervous system.

For more details see Schmidt et al. (2009)
C-type natriuretic peptide (CNP) is a bifurcation factor for sensory neurons.
PNAS 106: 16847-16852.

Photo and design courtesy of **Hannes Schmidt**

ATTENTION, PLEASE

Interview with Nenad Ban / Janko Brand

Nenad Ban obtained his BS degree in Molecular Biology and Biochemistry from the University of Zagreb. He got his PhD degree in the US at the Department of Biochemistry at the University of California at Riverside (1990-1994) where he focused on structural immunology and virology. His interest in large macromolecular assemblies led him for his postdoctoral work in 1995 to the Department of Molecular Biophysics and Biochemistry at Yale University, where he spearheaded the X-ray crystallographic structure determination of the large ribosomal subunit, a 1.5 MDa ribonucleoprotein complex, and determined its atomic structure in 2000 as part of the group in the laboratory of Thomas Steitz. These results revealed that the active site of the ribosome is formed out of RNA demonstrating that the ribosome is a ribozyme. The structure also opened up new possibilities for the development of new and improvement of existing antibiotics, since many antibacterial drugs inhibit the ribosome.
In 2000, Nenad Ban was appointed assistant professor of structural molecular biology at the ETH Zurich becoming full professor in 2007. The main goal of the research in his laboratory is to study structure and function of large protein assemblies using a combination of crystallographic, electron microscopic and biochemical experiments.
Taken from: http://www.mol.biol.ethz.ch/groups/ban_group/nenad

Prof. Dr. Nenad Ban

Job Opportunities:
** "Men (women) wanted for hazardous journey. Small wages. Bitter cold. Long months of complete darkness. Constant danger. Safe return doubtful. Honour and recognition in case of success." (Newspaper advertisement of Sir Ernest Henry Shackleton for one of his Antarctic Expeditions)*

I want to welcome you to Berlin and we are happy to have you here at the MaM2009. You arrived yesterday, where did you just come from?

I got back from the Nobel celebration in Stockholm; I was invited by Thomas Steitz because of my work on the large ribosomal subunit at Yale.

Do you want to tell us a bit about the celebration?

It was very exciting; the days that I was there the events were building up to the big ceremony at the 10th. There was a series of smaller meetings and events that brought together the laureates with members of the committee and people who had been invited as guests of the laureate's family. The laureates gave lectures on one of the days and a couple of days later the award ceremony and the banquette took place, which was also of course attended by the royal family. So it was a large and glorious event.

"It was absolutely remarkable to sit in front of the computer screen and get the first glimpse of the active site of the ribosome"

When you go back to the spring 2000, where you solved the structure of the ribosome at high resolution, can you tell us about the feeling you had in these days?

Yes, it was a very exciting time. I had been working on the ribosome structure in Tom's lab for five years starting in 1995, with gradual, critical moments when advances were made towards ultimately visualizing the structure at high resolution. In the end of 1997 Poul Nissen joined the project and together we brought the structure to high resolution in the year 2000.
It was absolutely remarkable to sit in front of the computer screen and get the first glimpse of the active site of the ribosome. It was a little bit like time travel, because we could see that the active site of the ribosome is formed entirely out of ribonucleic acids, therefore providing the first formal proof that the ribosome is a ribozyme, which had been proposed in the past, but nobody had experimentally demonstrated it. We had daily discussions and it was a wonderful time, but also a very stressful time because of course not all experiments worked out. We had several months, or even years initially where our crystallographic data seemed not to make sense until I discovered how to computationally overcome some unusual crystal disorder that precluded structure determination. Then the things got going a little bit more predictable, but up to that point it was stressful. Since I had weekly group meetings where I tried to present my current thinking and calculations on the project. That breakthrough suddenly allowed us to fully interpret the data and everything fell into place.

On your homepage you quote a newspaper advertisement of Sir Ernest Henry Shackleton*. So only the bravest students can work in your lab?

Well I think this little quote I have on our webpage shows that the projects that students or postdocs in my lab tackle are certainly not easy ones. The projects require people to see what the ultimate goal might be and to share this vision and be ready not only to work hard but also persist with projects that may

seem very difficult, almost impossible at the onset. I believe this is the right philosophy when dealing with difficult problems in science and many of them in my view can be overcome with some luck, with persistence, with proper approach and strategies. I hope that over the years with the work we have done in my group we have shown that in the right intellectual setting, the way it was for me in Tom Steitz`s lab, many such projects are actually tangible. Many breakthroughs can happen even when they are not completely anticipated at the beginning of the project.

Do you ever give up a project?

Certainly one should see at which point of the project one may encounter a major difficulty and then try to find a way around it. There are several strategies that need to be abandoned, but there is no need to abandon a whole project, because the ultimate goal may be obtained from a different direction. It is similar to having a mountain with a clear peak: maybe one path is not the right one, but changing the route slightly or, for example, taking advantage of the recent technical advances may bring you there.

"It is not unusual that while playing sports, going on a hike, going skiing, one can come up with an idea that may be important in the project"

At what time of the day you get your best ideas?

Science is funny in that regard: you never really have a break from it, because it is a passion, not really work. A lot of aspects of science can still be put down to everyday work, which is important to put things in the right place: secure funding, secure space, recruit good students, give lectures…Ideas concerning the projects come from everywhere; they come from literature and meetings. It is not unusual that while playing sports, going on a hike, going skiing, one can come up with an idea that may be important in the project. Sometimes I have difficulties then to remember those things (*laughs*) but they come back when you're in the lab while talking to people. A lot of these new ideas could be very helpful, but you really don't know which one is going to be particularly helpful. So it is good to keep discussing these things with the people who do the experimental work and then usually one of them works out. Of course there are big *eureka* type of events, but I think these are less common today in science because everything has to be very carefully tested and experimentally proven. It's mostly a series of little breakthroughs that then lead to big advances.

What makes you angry?

Sometimes it makes me angry when I feel there is something unjust being done. It doesn't have to be related to science. If I see any sort of clear injustice, even on the street, if somebody is obviously trying to trick somebody, it makes me upset. Those things of course are happening in the world on the big and on the small scale. I have to admit, sometimes I respond to those things emotionally; If I was a politician, I would respond to it maybe in a more rational way and try to politically do something about it.

Besides your University duties as full Professor at the ETH- Zürich, are you involved in any other political activities?

I have never been involved in other types of political work. I think that one of the reasons I like scientific thinking is that it does not, should not, depend on the political situation. Nevertheless, at some point you enter situations where science politics becomes an important factor of everyday's work. But I was never particularly active in politics and I enjoyed more to focus my attention as a student and later as a postdoc on scientific problems. I would clearly not like to work in a country where I didn't agree with the politics, but I generally try to stay away from politics because I think it is changing a lot. I like things that are very rational and make sense. Some political decisions to me frequently don't make sense and the opinions change too rapidly for my taste.

"I would clearly not like to work in a country where I didn't agree with the politics"

In Switzerland there was recently a vote against the erection of minarets.

I think that doesn't make sense. It must have been the consequence of some misinformation being spread among a group of people. It also seems to be the consequence of a significant group of people thinking that such a law will never pass, so that they did not become active in voting against it. Still, it seems that a significant fraction of people felt this is a good idea, for whatever reason. Obviously I don't share this opinion. This of course shows that it is not good to be passive if you have a different opinion and you have an opportunity to vote against it. I'm still not a Swiss citizen; I just have a permanent working permit in Switzerland and cannot vote.

Are you satisfied with the year 2009?

Yes, absolutely (*excitement in his voice and his eyes*), why wouldn't I be? I have had a very successful year with my group in Zurich and the recognition of the work done in Thomas Steitz's lab that I was part of comes now, nine years after the high resolution structure of the large subunit of the ribosome was determined. Even though some people occasionally might have mentioned this kind of result might lead at some point to a Nobel, it is very exciting to see it actually happen. In none of the years before I thought about it much, but somehow right before the announcement this year I had some sort of suspicion that it might happen this year. I don't know why, maybe some people from the field asked me more questions this year than in the years before, so I did not have an expectation, but a sense that it might be happening. So for the first time ever, I tuned in on the internet to the press announcements of the Swedish Academy of Sciences and there it was. To me it was such a shock, not only because it happened, but also the fact that I decided to look at it live for the first time. I watched it happen live! It was a little bit

like the effect you sometimes have watching live sport events: wow, this is a big surprise, this element of uncertainty when you are watching it.

As I see you talking in such an exciting way are you not somehow disappointed that you did not get mentioned in that term?

It's funny that you asked, because it never crossed my mind. I know the ribosome field so well, so it was clear to me that the critical discoveries that might lead to the Nobel prize are the first demonstration that the ribosomes can be crystallized (in Ada Yonath's group) and the first high resolution structures of the large and small ribosomal subunits published by Tom's and Venki's laboratories in 2000. I am very happy that Tom as the head of the team where I worked was recognized in this regard. On the other hand I feel thrilled about the fact that I prepared the crystals and calculated the maps that revealed the structure at higher and higher resolution. In some ways the award is majestic, it is a recognition, but it does come with a significant time delay to the actual excitement of the discovery, so the two have different flavors. The experience that we all shared when determining the structure is difficult to match with anything. For science, both the research and the recognition is important, and the fact that Tom now received the Nobel prize was an amazing moment, which also brought back to me the nice memories of how it was to solve the structure and see it for the first time.

Thank you very much Nenad!

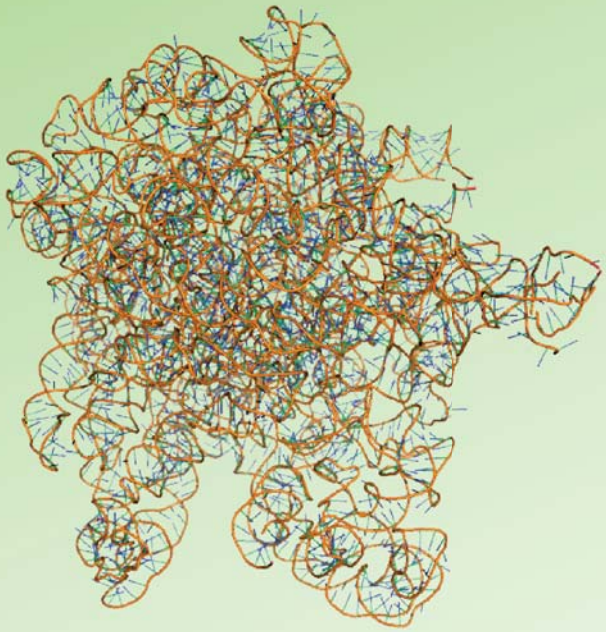
It took more than a decade to get the atomic structure of the ribosome - which is a very complex nucleic acid structure and an enormous protein-RNA complex that is responsible for synthesizing proteins. Many scientists believed that getting an atomic-level image of a ribosome would be impossible because its structure is so complicated. (Ribosomes contain more than 50 proteins and thousands of RNA nucleotides.)

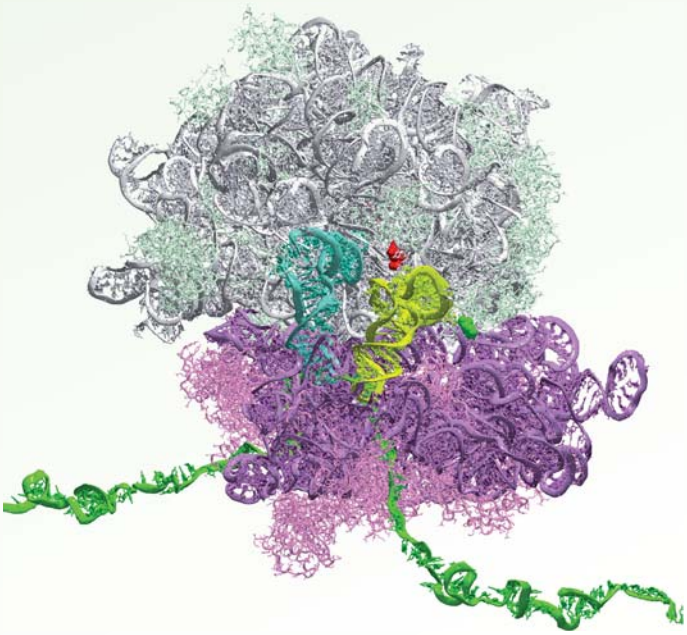
Pictures on the right show:

The large ribosomal subunit from Deinococcus radiodurans complexed with Methymycin (pdb: 3FWO)

Structure of functionally activated small ribosomal subunit at 3.3 angstroms resolution. (pdb: 1FKA)

The aminoacyl-transfer-RNA (yellow) caught in the act of delivering its amino acid (green) to the growing protein hanging off the peptidyl-transfer-RNA (cyan). The ribosome (large subunit in white and small subunit in purple) uses the transfer RNA molecules to read the genetic information from the messenger RNA (green). For visualization purposes, the top portion of the ribosome is cut away so that the transfer RNA molecules are visible. (Los Alamos National Laboratory)





1st HSR-MDC Joint PhD Meeting / Can Demiroglu

We did it, and it was a great success! The PhD students of two prestigious institutes of medical research, the Max Delbrück Center Berlin and the San Raffaele Scientific Institute Milan got together in the first meeting of its kind, the „1st HSR-MDC Joint PhD Meeting" in the not-yet-so-cold days of November in Stresa, Italy. The meeting was masterminded by Philip Maass, who just graduated from the MDC PhD program and organized brilliantly by the PhD students Aisha Sauer (HSR), Francesco Saverio Tedesco (HSR) and **Özlem Akilli-Oztürk** (**MDC**). There was a great amount of knowledge-sharing and scientific discussion for three days. A lot of e-mail addresses were exchanged, great Italian food was eaten and the tight schedule of talks and workshops was crowned by a fantastic party in the last evening.
The head of the office of Graduate Studies in San Raffaele, Prof. Marco Bianchi wrote in a retrospective comment:
"The Office of Graduate Studies of the PhD Program in Cellular and Molecular Biology wishes to express its gratitude and satisfaction to all the participants of the PhD meeting organized jointly by San Raffaele and the Max Delbruck Center, and in particular to the organizers. We think this was a very positive and fruitful experience. More than 80 students from the two institutions took part in the sunny atmosphere of Stresa on Lago Maggiore, and all presented their work in poster format. We were very impressed by the high standard of the 18 talks given by students, which matched the talks by senior scientists **Achim Leutz**, Giulio Cossu, **Walter Birchmeier**, Marino Zerial, and young group leaders (and alumni of the San Raffaele PhD program) Carla Taveggia and **Ines Ibañez-Tallon**.
In our opinion, and that of the students we asked (a statistically nonsignificant poll!), the session on what to do after graduating from PhD school was both interesting and useful, besides being lively. Miep Helfrich and Jonathan Dando gave a very heartening and rich overview on how to make a living (or a life!) in and with science, while not necessarily at the bench. All of which was laced together with making new friends, offering bits of science and of personal experience, and sharing a vision of the future. We think this format of the PhD meeting, organized by and for students, has a bright future (as our students have in science). Again, thanks to all, and looking forward to the future round!"
The carefully selected speakers gave some of the most insightful and entertaining talks of the last years. When asked about the meeting, the invited speakers generally made very positive remarks.
"I found the meeting excellent, for the little I could attend it. The atmosphere was friendly and interactive, the location is beautiful and the accommodation very nice. Science was of high level due to both invited speakers and students" Prof. Giulio Cossu said.
Dr. Jonathan Dando commented in a personal communication: "The meeting was a great way to meet with the bright minds in all the fields of life science research today and provide them with information and approaches that could empower them to become the brilliant leading minds of tomorrow."
The next meeting is already in preparation and is due to take place in September 2010. In order to give the best experience to all participants, the meeting will be jointly organized by the MDC, HSR and our traditional partners in crime, the Leibniz institute of Molecular Pharmacology Berlin (FMP). The organizing committee is established and the hotel is booked. We are open for suggestions regarding the keynote speakers and any comments. Please contact the organizing committee at phd.retreat2010@mdc-berlin.de.
Get together. Next year in Germany.

View on the wonderful Lago Maggiore

The poster session was well frequented

The CCP4 Study Weekend / CF

CCP4 (Collaborative Computational Project No. 4) is a software for macromolecular X-ray crystallography that "exists to produce and support a world-leading, integrated suite of programs that allows researchers to determine macromolecular structures by X-ray crystallography, and other biophysical techniques". For academic users the software suite and its programmes are totally free of charge, as the developers want to support the widest possible researcher community, "embracing academic, not for profit but for profit research".
The annual CCP4 study weekend at the beginning of January is a great opportunity for crystallographers and structural biologists to start the new year with an interesting and illuminating meeting. It is a chance to meet the CCP4 staff, who is there in full force to demonstrate the latest version of the software and to answer questions.
This year the conference took place in Nottingham and the topic of the meeting was "From Crystal to Structure". The study weekend was organized by Keith Wilson, Kevin Cowtan (both University of York) and Paul Emsley (University of Oxford). Keeping tradition with previous CCP4 meetings, the lectures fo-

cused on the presentation and discussion of advanced methods and techniques developed and used by the leaders in the field. Interesting talks were given by Henry van den Bedem (Stanford Synchrotron Radiation Lightsource), Gabor Bunkoczi (University of Cambridge), Jane Richardson (Richardson Lab at Duke University), Paul Emsley (University of Oxford) or Dale Tronrud (Oregon State University). Our institute delegates were **Verena Ezerski**, **Janko Brand**, **Claudio Shah** and **Chris Fröhlich** (all **AG Daumke**). We especially enjoyed the casual and friendly atmosphere of the meeting and furthermore the so called "Lunchtime Bytes" sessions, where one could learn more about the software suite and its programmes. The meeting was framed by a great conference dinner where the "The Flames" played evergreens and everybody could shake a leg.
"It was my first time in Nottingham and I liked this charming meeting very much. Of course I will try to go there next year again, as it is a great opportunity to meet leading developers of the field", Verena said. Sounds like the CCP4 meeting has a new fan...

International Symposium Membranes and Modules / CF

Udo Heinmann and **Oliver Daumke** (both group leaders at the MDC) were two of the many co-organizers of the international symposium „Membranes and Modules 2009" which was hosted by the Collaborative Research Centers SFB 449 "Structure and function of membrane-integral receptors" and SFB 740 "From Molecules to Modules" in Berlin. The meeting took place from December 10th to December 13th. The main objective of the Symposium was to present a state-of-the-art view on the organizational principles behind complex biological functions. The underlying concept was the functional protein modules with a special emphasis on biological membranes. Functional modules are specific subsets of the proteome which fulfil an autonomous function in living cells, thus bridging the gap between molecular detail and systems biology. They include the important group of macromolecular machines which are organized as compact structures, such as the ribosome or the proteasome, but also protein complexes that change their composition and organisation during function – like G-protein coupled signal transducers.

Participants of the International Symposium Membranes and Modules

Excellent talks were given by an unprecedented number of brilliant speakers such as Alfred Wittinghofer (MPI, Dortmund), Patrick Cramer (LMU, Munich), Harvey T. McMahon (LMB, Cambridge), Tom Kirchhausen (Harvard Medical School), Pietro De Camilli (Howard Hughes Medical Institute), Wolfram Saenger (FU, Berlin) or Nenad Ban (ETH, Zurich - note his interesting interview on page 3). Thomas Jentsch from the MDC presented his results about CLC chloride/proton exchanger in endosomal/lysosomal function and secretion. Furthermore, **Janko Brand**, **David Schwefel**, **Song Gao**, **Lena Wartosch** and **Oliver Daumke** (all of them MDC researchers) presented their findings at the poster session. With its outstanding density of brilliant talks and interesting poster presentations, the meeting was a must, not for structural biologists only. On Saturday night there was the possibility to chat more informally with the speakers of the meeting on a social event in the "Frannz Club" at "Kulturbrauerei" in Berlin's Prenzlauer Berg.

Annual Meeting of the American Society of Nephrology / Katharina Walentin

The annual meeting of the ASN, which is also called Renal Week, is the largest event regarding kidney research and nephrology industry worldwide and offers the largest public platform for nephrologists to announce revolutionary treatments, cutting-edge technological breakthroughs and future research efforts. Every year, more than 13,000 participants including physicians, scientists, and other healthcare professionals from all 50 U. S. states and worldwide take part in the meeting.
The ASN was founded in 1966 and is the largest organization devoted to the study and practice of nephrology in the world, with a focus on kidney function and kidney diseases. It promotes expert patient care and advanced medical research, providing research and travel grants to support clinical and basic science research. Furthermore, the society educates the renal community, generates educational tools that enable nephrologists to be more effective and organizes world-renowned meetings as well as regional meetings throughout the year to connect professionals of cutting-edge medical research and pharmaceutical industry. Finally, it publishes the Journal of the American Society of Nephrology (JASN), as well as the Clinical Journal of the American Society of Nephrology (CJASN) and some other newsletters.
Last year, the Renal Week took place from October 27th to November 1st in San Diego, CA, USA. The convention included presentations of groundbreaking research in free communication sessions and posters, as well as symposia sessions and conferences. All sessions comprised a wide range of topics from basic science (e. g. molecular basis of kidney development) to clinical practice (dialysis) and public policy. In the symposia sessions, the speakers presented extensively on background information as well as new research results. The free communication sessions consisted of shorter, 8 minutes talks.
I had the chance to discuss my data, which I had presented on a poster, with other scientists working in the same research area and related topics. It was also very interesting to see other people presenting their work. By attending the poster sessions, symposia and free communication sessions, I could improve my scientific knowledge regarding anatomy, molecular biology, cell

biology and pathology of the renal system and received a lot of new information concerning methods and relevant background. Altogether participating in the Renal Week 2009 was a fulfilling experience and I'm looking forward to the Renal Week 2010.

39th Annual Meeting of the Society for Neuroscience / Marta Slimak

Many MDC employees, both postdocs and PhD students working in neuroscience research, attended the biggest neuroscience conference of the year – the 39th Annual Meeting of the Society for Neuroscience, which took place between 17 and 21 of October in Chicago. The meeting gathered more than 30,500 participants from all over the world, who submitted over 15,000 abstracts. The meeting gave an outstanding opportunity to all attendees to exchange the ideas and scientific experience with other researchers of all levels, from graduate students to the world's leading scientists in this field. Lectures, symposia, workshops, and events organized during the conference allowed the participants not only to expand their knowledge, but also get familiar with the newest techniques and methods of modern neuroscience research. The meeting also provided an excellent chance to develop or join already existing scientific networks. Those who considered quitting their scientific career were given a possibility to explore the current market situation and get in touch with the representatives of various biotechnological companies.

2nd Annual Meeting of NGFN-Plus and NGFN-Transfer / Fabian Hosp

The 2nd Annual Meeting of NGFN-Plus and NGFN-Transfer in the Program of Medical Genome Research took place during November 26-28, 2009 at the Henry-Ford-Building, Berlin.
The conference was organized by the "Nationales Genomforschungsnetz (NGFN)" and was initially thought as an annual conference for all members of NGFN research consortia but was now open for all interested scientists without any fee of charges. More than 700 participants listened to internationally renowned speakers and presented their work on nearly 400 posters.
Several members from the labs of Erich Wanker and Miguel Andrade participated. **Björn Schwanhäusser** (Selbach lab) gave an outstanding talk about „Genome-wide analysis of protein and mRNA half-lives reveals dynamic properties of mammalian gene expression".
Representing all NGFN research consortia, the conference combined the enormous diversity of medical genome research in Germany, which was represented in the six symposia "Genomics of Common Disease", "Genomics of Sporadic Cancer", "Animal, Cellular & Tissue Models", "Systems Biology", "New Technologies" as well as "Transfer from Genomics to Application".
http://www.ngfn-meeting.de/2009/de/home.html

Trip to Lübeck on Novmeber 29th 2009

A nice trip - doctoral students in front of the Holsten Tor in Lübeck

On the 29th November 2009 the Graduate Office team went with about 20 students to the Hanseatic capital, Lübeck, for a day of Christmas markets, Glühwein and Marzipan. Lübeck, a charming city located close to Hamburg, is on UNESCO's list of world heritage thanks to its gothic architecture. Upon arrival at the Holstentor, the gothic entrance gate to the city, we went on a guided walk through the old town, where we learned about the history of the city dating back from the 12th century, the seven churches, and the famous people of the city, such as Thomas Mann and Günter Grass. The walk ended in the narrow labyrinthine alleys in the northern part of the city, which are nowadays done up and inhabited by artists and bohemians.
In the afternoon there was time to visit the many Christmas and handcraft markets and churches. A visit to the world-famous Marzipan producer Niederegger's shop and café was also a must. Although we had no snow to complete the magic, it was still a special day in a beautiful old city.

RISE scholarship program (DAAD) / NCE

So much to do, so little time. At some point during your PhD, you might realize you have many experiments that need to be done. If you only had another pair of hands to help you out! This is where the RISE (Research Internships in Science an Engineering) program of the DAAD might help you.
What is RISE? RISE is a scholarship of the DAAD given to undergraduate students of highly ranked universities in Canada, UK or the United States to spend 6-12 weeks at a research institution in Germany under the supervision of a PhD student.
Why should I apply? You will get support with your experiments in the laboratory from a highly motivated undergraduate student, helping you move faster in the project. You will also get new contacts from a North American or British university and get experience in personnel management.
What is expected of me? You should be willing to supervise an undergraduate student in the laboratory, but also help them out with finding accommodation and bureaucratic and cultural issues.

How does the application process work? You register online by filling out the application form and describing your project, as well as the work to be performed by the student. A letter of recommendation by your PhD supervisor is also needed. After a first selection process, you will receive the applications from students who find your subject interesting. You will be asked to rank those applications, and if everything goes well, a scholarship will be given to one of those students, who will then spend part of their summer in your lab.
When is the application procedure and how long does it take? You can register online starting in November. The whole procedure takes about 6 months. The students come in the summer.
Where can I find more information? On the website of the DAAD: http://www.daad.de/rise/en/
Can I talk with someone at the MDC about the program? Vedrana Tabor took part in this program in 2006, while she was a PhD student of the MCB Graduate Program. She's now a Postdoc at the FMP. You can contact her by e-mail: vedrana.tabor@fmp-berlin.de

New PhD Program MyoGrad / NCE

Since November 2009, our MCB Graduate School is associated with a brand new PhD Program called Myograd. It was established by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) and it will give out stipends for 18 PhD or MD-PhD students yearly, as well as 5 stipends for MD students. This program carries on with the collaborative concept already known for the BIMSB Phd Program. It has built an international network of institutions that all will take part in the project: the Chartié Medical School, the Freie University, the Humboldt University and the University Pierre et Marie Curie in Paris (Paris VI). Applications are open until February 1st 2010. For more information, visit the website of the program: http://www.charite-buch.de/myograd

Helmholtz Juniors

The Helmholtz Juniors is a doctoral initiative within the Helmholtz Association of German Research Centers which represents the interests of the graduate students of all 15 Helmholtz research centers.

Objectives of the Helmholtz Juniors involve intense networking among students themselves and a further improvement of doctoral programs in terms of care, infrastructure, satisfaction, working hours and remuneration of graduate students by constructive initiatives. The Helmholtz Juniors Association is governed by the statutes of fairness amongst all doctoral students, openness to new ideas, reliability and equality.
In each Helmholtz Center, two Helmholtz Juniors representatives are elected from the doctoral students every year. At the beginning of this year (on January 14th as announced by the Graduate Office), **Nuria Cerdá-Esteban** and **Chris Fröhlich** were elected as the Helmholtz Juniors representatives for the MDC. Unfortunately, only a small group of students was present at the election. For the future, we hope to increase the level of information on this association and that our work over the coming year will convince more of you to join the next election.
We hope to increase the awareness for the social needs of the PhD students at our institute. The next meeting of the Helmholtz Juniors will take place in 2010. Until then, we want to get a sense of the needs of the students at the MDC. We wish to establish a platform for the students on campus to communicate and initiate a discussion on the issues that concern you. Please come talk to us about any concerns or ideas you might have. It is important that the PhD students have a voice and a structured way of communicating their needs to the other branches of the institute.

Chris & Nuria

New Program Coordinator

Dr. Michaela Herzig *has taken over the coordination of the international PhD program, substituting Dr. Oksana Seumenicht during her maternity leave. Michaela is originally from Vienna and until November 2009 was a post-doc in the laboratory of Dr. Philipp Selenko at the FMP. You can reach her under the phone number 4243 or per email at michaela.herzig@mdc-berlin.de. If you have fresh ideas for the Graduate Program, don't hesitate to drop by the Coordination Office in building 84, room 1015.*

MDC Alumni: Dr. Boris Jerchow / NCE

In this issue, we start presenting to you alumni of the MDC Graduate Program and the career paths they have chosen. We want you to get to know different careers that might be open to you after finishing your PhD. Our first alumnus is Dr. Boris Jerchow, who is working on campus as Head of the Transgenics Facility and Deputy Manager of the Animal Facility. Dr. Jerchow was a PhD student in Prof. Walter Birchmeier's laboratory. When he finished his doctoral studies in 2003, he belonged to those students who felt that pursuing a career in academic science might not be the right path after all. While he had produced what is now a very widely used and cited transgenic mouse line (Axin2lacZ), at the time he felt that his PhD publications would not allow a prestigious academic career. A father of three kids, he looked for a position that would allow him to spend generous amounts of time with his family.

He ended up in a position that is essential to help out academic research and is not an 8-to-5-job. It is essentially an administrative position, for which excellent organizational skills are required. As one of the responsible people for the Animal Facility, he takes care of bureaucratic issues concerning the in vivo experiments on the 50.000 mice and 1.600 rats living in the Animal House. This includes managing the staff of 60 people who take care of the animals or reviewing the applications that need to be sent out to the Berlin administration in which the ethical concerns of the experiments are discussed and justified. In the Transgenic Facility, Boris deals with the organization and supervision of numerous projects of production of transgenic lines, around 30 per year. He discusses with MDC scientists the strategy for producing their transgenic lines and supervises the work performed in the laboratory by technicians Katja Becker and Tianwu Qiao.

But how does one get to a position like this? As usual, it was an event that could not be planned, but happened by chance. In 2003, the MDC did not yet have a Transgenic Facility, and Dr. Jerchow started working for RCC, a company that at the time managed the mouse colonies and was in charge of transgenic services for the campus. Once the Animal House we now know was finished, he was offered the position of Head of the Transgenic Facility and Representative Director of the Animal Facility.

What does the future hold? Science moves fast, so a very important aspect of Boris' work is to keep up with state-of-the-art techniques. He has made sure that he keeps offering interesting products within his facility, now including in vitro fertilization and embryo freezing. An excellent platform to keep developing new offers and getting the scoop on the newest techniques is the International Society for Transgenic Techniques (ISTT), which organizes an annual conference. This year, it will take place at the MDC, and Dr. Jerchow, who is a member of the ISTT board, is involved in its organization. This conference discusses the technical aspects of transgenic techniques, stem cell research, phenotype analysis and animal protection issues. The speakers include Francis Stewart and Hans Schöler and the talks are kept at a level that should be understandable for every researcher, so if you are interested in listening to them, make sure you register before March 14th.

If you have more questions about the work at a Transgenic Facility, you can contact Boris at
boris.jerchow@mdc-berlin.de

If you want us to present any specific job or you know an alumnus in an interesting position, write to us at:
maxmoeglich@mdc-berlin.de

Publication Highlights

We'd like to congratulate our fellow **PhD students** who have recently seen their excellent work published!

A nuclear poly(ADP-ribose)-dependent signalosome confers DNA damage-induced IkappaB kinase activation.
Stilmann M, Hinz M, **Arslan SC**, Zimmer A, Schreiber V, Scheidereit C.
Mol Cell. 2009 Nov 13;36(3):365-78.

DNA methylation protects hematopoietic stem cell multipotency from myeloerythroid restriction.
Ann-Marie Bröske, **Lena Vockentanz**, Shabnam Kharazi, Matthew Huska, Elena Mancini, Marina Scheller, Christiana Kuhl, Andreas Enns, Marco Prinz, Rudolf Jaenisch, Claus Nerlov, Achim Leutz, Miguel Andrade-Navarro, Sten Eirik Jacobsen, and Frank Rosenbauer.
Nature Genetics 41 (11): 1207-1215. November 2009.

Usa1 functions as a scaffold of the HRD-ubiquitin ligase.
Horn SC, **Hanna J**, Hirsch C, Volkwein C, Schütz A, Heinemann U, Sommer T, Jarosch E.
Mol Cell. 2009 Dec 11;36(5):782-93.

Establishment of a neuroepithelial barrier by Claudin5a is essential for zebrafish brain ventricular lumen expansion.
Zhang J, Piontek J, Wolburg H, Piehl C, **Liss M**, **Otten C**, **Christ A**, Willnow TE, Blasig IE, Abdelilah-Seyfried S.
Proc Natl Acad Sci U S A. 2010 Jan 5.

Did you know that...?

The MDC's Animal Facility hosts more than 50.000 mice and about 1.600 rats !

SAVE THE DATE

PhD selection round 2010 / Jana Droese

In the 2010 PhD selection round we have received 944 registrations in our PhD application system and 303 candidates submitted their applications with at least one reference. The interviews will be held between the 21st (arrival) and 26th (departure) of March. The candidates will do a 5 minute presentation, have interviews with the group leaders and do a formal interview with the graduate commission. We would prefer if we would have this year more interaction between you and the applicants, so you are welcome to the social activities, dinners and the party which will take place at the end of the Selection week. It will start on the 25th at 6 p.m. in the Gläsernes Labor. (We would need some help with the music, decoration, clean up afterwards). We would like to establish a kind of "mentoring system" where you as PhD student will serve as contact person for general / specific questions about a PhD at the MDC for one or more applicants (dependent on your participation). We would also need some people for the pick up of the students from the airport or train station to the hotel (in Prenzlauer Berg).
If you are interested in the participation, please send an e-mail to jana.droese@mdc-berlin.de.
Thank you in advance!

PhD Retreats 2010

This year, PhD students have multiple opportunities to present their data to their fellow colleagues. Save the date for the retreats you want to participate in!

Spring Meeting (see page 14)	March 15th-18th
TransCard Retreat:	May 5th-7th
PhD Symposium on Campus:	May 27th
MyoGrad Retreat:	June 14th-18th
MCB PhD Student Retreat:	September 9th-11th
MolNeuro Retreat:	September 16th-19th

Soft Skills Seminars 2010

Furthermore, there are several Summer Schools or Soft Skill Seminars you can visit.

Summer School on campus: June 22nd-30th

Summer Schools for TransCard / MolNeuro Students (not on campus!):

June 17th-19th / June 19th-21st	(for 1st year students)
August 30th-September 1st	(for 2nd year students)
September 2nd-4th	(for 3rd year students)

Did you know that ...?

around 1.000 chocolate bars are consumed per week at the MDC !

Cold Spring Harbor courses

The application deadline for the very acclaimed practical courses at Cold Spring Harbor Laboratories (NY, USA) is coming up. If you are looking to expand your knowledge in a subject that you need for your thesis and you are not familiar with, this might be the perfect opportunity to speed up the learning process in a stimulating environment and surrounded by the very best experts in that field. Look through their program, there might be something for you!
Prepare your application carefully – there are not too many places available!

Application deadline: March 15th 2010!!

"Advanced Bacterial Genetics"
June 9th-29th 2010
http://meetings.cshl.edu/courses/c-abg10.shtml

"Ion Channel Physiology"
June 9th-29th 2010
http://meetings.cshl.edu/courses/c-ion10.shtml

"Molecular Embryology of the Mouse"
June 9th-29th 2010
http://meetings.cshl.edu/courses/c-mous10.shtml

"Integrative Statistical Analysis of Genome Scale Data"
June 16th-29th 2010
http://meetings.cshl.edu/courses/c-data10.shtml

"Computational Neuroscience:Vision"
June 18th-July 1st 2010
http://meetings.cshl.edu/courses/c-visi10.shtml

"Computational Cell Biology"
July 2nd-22nd 2010
http://meetings.cshl.edu/courses/c-comp10.shtml

"Molecular Techniques in Plant Science"
July 2nd-22nd 2010
http://meetings.cshl.edu/courses/c-plan10.shtml

"Neurobiology of Drosophila"
July 2nd-22nd 2010
http://meetings.cshl.edu/courses/c-dros10.shtml

"Advanced Techniques in Molecular Neuroscience"
July 6th-22nd 2010
http://meetings.cshl.edu/courses/c-atmn10.shtml
"Genetics of Complex Human Diseases"
July 6th-12th 2010
http://meetings.cshl.edu/courses/c-gcd10.shtml
"Proteomics"
July 22nd-August 4th 2010
http://meetings.cshl.edu/courses/c-proteo10.shtml

"Eukaryotic Gene Expression"
July 27th-August 16th 2010
http://meetings.cshl.edu/courses/c-gnx10.shtml

"Imaging Structure and Function in the Nervous System"
July 27th-August 16th 2010
http://meetings.cshl.edu/courses/c-imag10.shtml

"Yeast Genetics and Genomics"
July 27th – August 16th 2010
http://meetings.cshl.edu/courses/c-yeas10.shtml

Application deadline: April 15th 2010
"Brain Tumors"
July 22nd – 28th 2010
http://meetings.cshl.edu/courses/c-braintumors10.shtml

"Stem Cells"
July 30th – August 8th 2010
http://meetings.cshl.edu/courses/c-stem10.shtml

EMBO and Wellcome Trust upcoming courses

"Computational Molecular Evolution"
Iraklio (Greece), May 3rd-12th 2010
Application deadline: January 31st 3010
http://cwp.embo.org/pc10-25/

"Scientific Programming and Data Visualization for Structural Biology"
Heidelberg (Germany), May 5th-7th 2010
Application deadline: January 31st 2010
http://www.embl.de/training/courses_conferences/course/2010/APP10-01/index.html

"Advanced optical microscopy"
Plymouth (UK), April 7th-17th 2010
Application deadline: February 15th 2010
http://cwp.embo.org/pc10-14/

"DT40 cell line as a model vertebrate genetic system"
Galway (Ireland), June 14th-19th 2010
Application deadline: February 19th 2010
http://cwp.embo.org/pc10-17/

"In silico systems biology"
Hinxton (Cambridge, UK), April 10th-13th 2010
Registration deadline: February 26th 2010
http://www.ebi.ac.uk/training/handson/course_100410_sysbiol.html

"MicroRNA profiling"
Montetorondo (Italy), April 10th-16th 2010
Registration deadline: February 27th 2010
http://www.embl.it/training/courses_conferences/course/2010/EVB10-01/index.html

"Animal models for physiology and disease"
Sheffield (UK), July 19th-30th 2010
Application deadline: February 28th 2010
http://cwp.embo.org/pc10-01/

"Lipid rafts"
Dresden (Germany), May 23d-31st 2010
Application deadline: March 1st 2010
http://cwp.embo.org/pc10-08/

"Ubiquitin and SUMO"
Split (Croatia), July29th-August 4th 2010
Application deadline: Apri 1st 2010
http://cwp.embo.org/pc10-22/

"Electron microscopy and stereology in cell biology"
Oslo (Norway), June 17th-27th 2010
Application deadline: April 18th 2010
http://cwp.embo.org/pc10-19/

"Functional Genomics and Systems Biology"
Hinxton (Cambridge, UK), June 16th-25th 2010
Application deadline: March 5th 2010
http://www.wellcome.ac.uk/Education-resources/Courses-and-conferences/Advanced-Courses/Courses/WTX026850.htm

"Molecular Neurology and Neuropathology"
Hinxton (Cambridge, UK), June 19th-26th 2010
Application deadline: March 5th 2010
http://www.wellcome.ac.uk/Education-resources/Courses-and-conferences/Advanced-Courses/Courses/WTX027322.htm

"Next Generation Sequencing"
Hinxton (Cambridge, UK), July 18th-24th 2010
Application deadline: April 1st 2010
http://www.wellcome.ac.uk/Education-resources/Courses-and-conferences/Advanced-Courses/Courses/WTX056918.htm

"Human Genome Analysis: Genetic Analysis of Multifactorial Diseases"
Hinxton (Cambridge, UK), July 21st-27th 2010
Application deadline: April 1st 2010
http://www.wellcome.ac.uk/Education-resources/Courses-and-conferences/Advanced-Courses/Courses/WTX026851.htm

Chinese New Year

Don't miss the celebration of the Chinese New Year on Friday, February 12th during the Beer Hour!! The Graduate Office will provide Chinese food and non-alcoholic beverages. For the beer, as usual, the price is 3€ for the whole evening. We would like to thank the Graduate Office for donating the food and the soft drinks!

春节特别活动

不要错过在春节前夕，2月12日周五Beer Session时间举办的春节特别活动！！届时将有丰富的中餐及非酒饮料免费提供。啤酒当然也是必不可少的，如想品尝，3欧元喝到饱！！Graduate Office为此次活动提供除啤酒以外的所有资助（遗憾，因为德国法律不允许在此种情况下对酒精饮料进行资助），在此表示由衷的感谢！！

ONE DAY IN...

... AG SELBACH

by Sarbani Bhattacharya

In March 2007, Matthias Selbach started at the MDC with one PhD student and a technician. Before long, the number of acrobats in his 'flying-ion circus' was soaring high and space became a major concern. On entering the hallowed portal of AG Selbach, settled on the third floor of MDC house, one is most likely to come across a Laughing Buddha look-alike man who is the tech wizard, a bunch of cheery fellows and Matthias, the man himself whom no one has ever seen without a big broad smile on his face. It does not take long to realize that this lab runs high on energy but low on stress. Work hard, play harder – Selbach fellows strongly believe in this adage. It was in this very lab that the first beer hour was planned and executed. In almost all 'social events', one would find at least one representative of this lab happily merrymaking. So what do Matthias and his 9 lieutenants do all day long besides sitting around and conceiving the ideas of happy hour? As someone in bus number 351 once told me with a poker face 'something mass spec!' Now, that 'something' is actually 'mass spectrometry based quantitative proteomics'. Sounds a bit Latin, does it… let me explain.

Proteins, as we know are at the 'executive core' of cellular events, and are in direct control of almost all cellular processes. Therefore, understanding the structure, dynamics and interactions of proteins or in short proteomics has been at the heart of biomedical research in the post-genomic era. Proteomics experiments most often require the simultaneous analysis of several thousands of proteins - ideally the entire proteome - in the same experiment. Since Mass spectrometers can sequence thousands of peptides from complex mixtures in no time, Mass spectrometry (MS) has arguably become the core technology in proteomics and the two have become synonymous. For many of us MS means submitting a sample and getting back a list of identified proteins. But MS is much more than protein identification 'service' only. It is a powerful technology which can be applied to measure changes in protein abundance, posttranslational modifications, intricates of intracellular signalling and protein-protein interactions or protein turnover at the scale of the proteome. But before going into details let us have a brief look on how MS works.

In a typical MS experiment protein sample which is prepared from cell culture or tissue sample, is digested in-gel or in-solution into short peptides by highly specific endopeptidases like Trypsin and/or Lys-C and the resulting peptide mixtures are fractionated by reversed-phase liquid chromatography (LC). A mass spectrometer consists of three basic components: an ion source, a mass analyzer, and an ion detector. The fractionated peptide mixture is subjected to an electric potential in ion source, resulting in dissolution and ionization of the peptides and generating a spray of fine mist of ions (electrospray ionization; ESI). After ionisation, the sample reaches the mass analyser, which separates ions by their mass-to-charge (m/z) ratios. Ion motion in the mass analyser is manipulated by electric or magnetic fields to direct ions to the detector, where numbers of ions at each individual m/z value are recorded. The determined

Mass spec pros: the group of Dr. Matthias Selbach

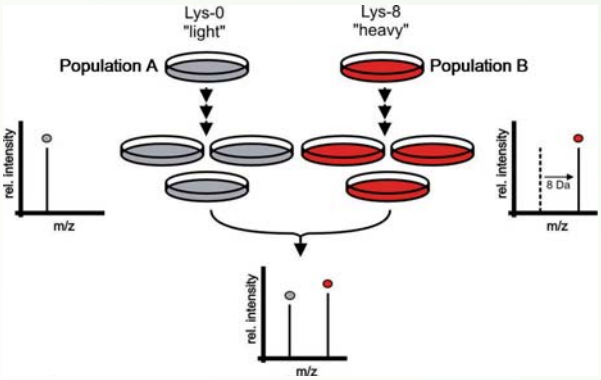
masses are then compared against comprehensive protein sequence databases for peptide and subsequent protein identification in the original mixture.
Often, we are interested not only in the identity of a protein, but also in its quantity because functional insight most often requires quantitative comparison between two or more biological states. Quantitative data comes in two forms, the absolute amount of the protein in the sample or the relative change in protein amount between two states. Although MS-based approaches promptly identify a large number of proteins, it provides a very limited picture of protein abundance in a sample. The peptide ion signal intensity does not directly indicate the amount of the proteins present due to differences in ionization efficiency and/or detectability. However, relative quantification is possible, for example, when comparing the proteomes of two different cellular states, by labeling one proteome with a stable isotope either by chemical tagging or metabolic labeling. This is due to the fact that labeled and unlabeled peptides are identical in chemical composition but due to the heavy isotopic label, there is a mass difference which can be detected by MS. Therefore, the differences in the signal intensities of the isotope pairs accurately reflect difference in the abundance of the corresponding proteins. Metabolic labeling of proteins involves the incorporation of stable isotopes during the process of cellular metabolism and protein synthesis.

The most common form of metabolic labeling is called SILAC (stable isotope labeling with amino acids in cell culture). In this approach, one population of cells (population A) is grown in medium that contains a 'light' (normal) amino acid and the other in a medium that contains a 'heavy' amino acid i.e a stable isotope-labelled analogue (population B). The heavy amino acids can be lysine, arginine or tyrosine containing H^2 instead of H, C^{13} instead of C^{12}, or N^{15} instead of N^{14}. Through cell proliferation, heavy labeled amino acids are uniformly incorporated into all proteins and complete labeling is usually achieved after five cell doublings. The two resulting cell populations are pooled and analyzed. Each peptide appears as a pair in the mass spectra - the peptide with lower mass contains the light amino acid, and the peptide with higher mass contains the heavy amino acid. The MS measurement readily differentiates between peptides originating from the two pools as incorporation of the heavy amino acid into a peptide leads to a known mass shift compared with the peptide that contains the normal amino acid (for example, 6 Da in the case of C^{13} Arg-6), but to no other chemical changes.

If the SILAC peptide pair appears in a one-to-one ratio then there is no difference in the abundance of this protein between the proteomes. However, higher peak intensity of the heavy amino acid labeled peptide indicates that the protein is more abundant in population B. Thus, the ratio of peak intensities directly reflects the difference in the amount of a given protein in the two different cell pools (as shown in the figure below). Using stable isotope in the food source complete labeling has been achieved for microorganisms like bacteria and yeast which can in turn be fed to small organisms such as *Caenorhabditis elegans* or *Drosophila melanogaster* to label the respective proteomes.

A particular focus of the Selbach lab is posttranslational regulation by microRNAs using SILAC based approach. miRNAs are short ~22 nucleotide RNA sequences which play an important role in gene regulation and are therefore involved in most key biological processes. To date, researchers have identified a few hundred human miRNAs but it is not clear which proteins they regulate. In a break-through study using SILAC based proteomics approach, researcher from the Selbach and Rajewsky groups could quantify for the first time protein synthesis for thousands of different human proteins and could further identify and quantify the direct impact of specific miRNAs on target protein synthesis. The Selbach lab has also devised a novel pulsed SILAC (pSILAC) strategy where cells are pulse labeled with two different stable heavy isotopes for a certain period of time. Using this approach recently they have been able to directly quantify protein translation on a proteome-wide scale.

SILAC has been proved to be a simple yet very powerful approach and has recently become the gold standard of MS-based quantitative proteomics. Proteins thus identified can be integrated with annotational databases like Gene Ontology and PFAM, or mapped to network and pathway databases (STRING, KEGG) to find enriched biological processes, functions, cellular components and protein domains. Thanks to the rapid advances in computational methods, instrumental advances and innovative experimental strategies, MS-based quantitative proteomics has the ability to provide a more accurate picture of protein-directed biological processes and can be used to ask profound questions, which are limited only by the imagination of the researcher.



The principle of SILAC. Cells differentially labeled by growing them in light medium with normal lysine (Lys-0, grey colour) or medium with heavy lysine (Lys-8, red colour). Metabolic incorporation of the amino acids into the proteins results in a mass shift of the corresponding peptides. This mass shift can be detected by a mass spectrometer as indicated by the depicted mass spectra. When both samples are combined, the ratio of peak intensities in the mass spectrum reflects the relative protein abundance.

Utterly scientific

The third Monday of January is the most depressing day of the year. If you don't believe it, you can calculate it yourself with this accurate scientific formula:

((W + (D-d)) x TQ) / M x Na

Where W = weather, d = debt, T = time since Christmas, Q = time since failing your new year's resolutions, M = low motivational levels, Na = the feeling of a need to take action, D = arbitrary variable with arbitrary units.

The formula was developed by psychologist Cliff Arnall and used for a publicity campaign in 2005. Ever since, **Blue Monday** has been included in the popular calendars and used for cheering-up campaigns.

The good news? If you're reading this, you already survived to this year's most miserable day, January 18th.

If you feel like you could use some motivation and inspiration, make sure to read Janet Rossant's assay on the *Journal Molecular Biology of the Cell*, entitled "A Developmental Journey and Lessons Learned Along the Way".

http://www.molbiolcell.org/cgi/content/full/21/1/9

The last paragraph includes priceless advice to guide you during your scientific career!

SCHOKOPAUSE

by Chris Fröhlich

Without them nobody at the MDC would receive anything. These guys take care of the correct distribution of all our goods. From pencils to ultracentrifuges – they receive, process and finally distribute everything we ordered. Today we are going to introduce the central store and goods receiving department of the MDC. Three handsome men are the core team who is responsible for accomplishing this task. Klaus Schwebs was born in Bernau near Berlin. As a trained stock manager he has been working at the MDC for more than 27 years now. Currently in his 50s, he is a passionate biker in his spare time. Horst Schmeißer is a 51-year-old Berlin Original and has been working at the MDC since 2008. He is a truck driver and trained stock manager. In his leisure time he likes to take photos with one of his professional cameras. Their partner in crime is Oliver Dittert. He was born in 1988 in Henningsdorf and did his apprenticeship in office communication systems at the MDC. He works at the MDC for more than 5 years now. He likes to do sports, read and to meet his friends.

They take care for our goods: Oliver Dittert, Klaus Schwebs and Horst Schmeißer (from left to right)

Hey Horst, Oliver and Klaus! So what do you do the whole day?

Horst: The three of us do similar things. We are the receiving department for the MDC. We open the store from 8 – 10 am, where you can get consumable supplies. Afterwards we take care of the receiving department and internal transports of e.g. equipments.

How long does the ware stay in the receiving department – from arrival to release?

Horst: We receive articles all day long from 7 am to 3 pm. And then it depends... The pick-up and delivery service starts at 11am and supplies the entire campus. On average, it takes 1.5 to 2 hours from receipt, revision to delivery.

Klaus: When we leave work for the day, everything has been processed and the receiving department is empty until the next day. So at the end of the day all deliveries reach their final destination.

How many deliveries do you receive per day?

Oliver: We can monitor this in our statistics. On average we get 150 - 200 arrivals of goods per day, whereas many deliveries involve several packages, e.g. 40 boxes of gloves are one delivery. In total we receive 3000 single packets per month.

What groups or departments at the MDC order the most?

Oliver: Of course big groups like Wanker, Jentsch, Birchmeier, Blankenstein, Lipp and Gotthardt obtain numbers of deliveries above average. Within the campus, we supply house 31.1 and 31.2 as well as the houses 10, 63, 64, 84, 85, 87, 88, ECRC, the Walter-Friedrich-House and the animal facility with goods.

What was the biggest, most extraordinary or funniest packet that you have ever received since you work here?

Klaus: Well, we knew this question will come definitely and trained hard to give the appropriate answer *(laughs)*.

Horst: Well, the most extraordinary I have ever seen in my relative short period at the MDC was a giant frog container from the United States - it was a kind of terrarium that was delivered on plenty of huge pallets. And we even have had Armani suits and witch-masks with warts *(all laugh)* and Christmas trees, motorcycle helmets, snowboards - actually we have had everything.

Is there a special time period during the year when notably more or less is ordered?

Klaus: Yes, definitely before Christmas. When the accounts have to be depleted, delivery frequencies are very high. And it even starts at the end of September.

Horst: In the last two years during summertime we have had a „summer gap". During this time we had very few deliveries.

What articles are the most wanted ones, the timeless classics?

Klaus: Gloves and toilet paper.

Oliver: Yes, and of course everything we store in our warehouse, which is about 240 different articles. Everyone who drops by takes gloves with them.

How many people work here except the three of you and the two known faces from the pick-up and delivery service?

Horst: Actually just the three of us, as the pick-up and delivery

service which delivers the houses 31.1, 31.2 and house 84 is done by an external company, Rhenus Logistiks. Mr. Joachim is our driver and he delivers all the other houses on campus.

Have many things changed compared to the time before the German reunification?

Klaus: Well, in that time I was the facility manager at the MDC and it was one of my jobs to deliver the packets here. During that time there was only one or two deliveries per week, which I could easily distribute with my pushcart *(laughs)*.

With respect to the huge amounts of different parcels you see everyday – are you happy receiving parcels at home anyway?

All three: Yes, of course!

Horst: Altogether work is much fun; we do very well as a team.

Oliver: Exactly, especially because the work here is so diversified - there are days on which we receive a bulky microscope table weighing half a ton and nobody knows where to store it. We have to find ad-hoc solutions in those cases.

Klaus: Yeah exactly – everyday something won't work properly and it's like in MacGyver on TV and we have to get to the bottom of it. But that's normal, it's fun!

Are there certain things you are annoyed with or happy about?

Oliver: Well, we are the final step within the purchasing process at the MDC and therefore errors show up in our department first. If a company is not delivering, some people start complaining to us and say we didn't submit the order, we submitted the wrong order or we did order but we did not hand over correctly. Those situations do occur but luckily are extremely rare. In those cases critique is very unfair.

Horst: But constructive criticism is always welcome! That's because our work is very service-based and we always look for possibilities to support the work of our scientists.

Oliver: Yes it is. We prolonged the opening hours by one hour by popular request. People like to come down to us to order, have a chat and joke with us. By the way, you can recognize the typical PhD student because they will stand in front of the door at five minutes to ten, breathless and soaked in sweat. In general it is very important to enjoy your work.

Horst: Yes, and when the radio plays a good song like something from AC/DC we turn up the volume. And every two weeks we make a nice „Hackepeterründchen" with „Schrippchen". That's nice and contributes to a good atmosphere here in the receiving department.

Thanks for taking your time for this interview!

German version:

Ohne sie würde am MDC niemand irgendetwas erhalten. Diese Jungs sorgen für die korrekte Verteilung all unserer Bestellungen. Ob Bleistifte oder Ultrazentrifugen; sie nehmen unsere Waren in Empfang, bearbeiten sie und sorgen letztendlich für die richtige Auslieferung an den entpsrechenden Empfänger. Heute stellen wir die Zentrale Warenannahme und das Zentrallager vor.
Drei stattliche Männer bilden das Kernteam um diesen Aufgabenbereich. Klaus Schwebs wurde 1959 in Bernau bei Berlin gebohren. Als ausgebildeter Facharbeiter für Lagerwirtschaft arbeitet er mittlerweile seit mehr als 27 Jahren am MDC. In seiner Freizeit ist Klaus ein leidenschaftlicher Biker. Horst Schmeißer, ein 51jähriges Berliner Original, arbeitet seit 2008 hier am MDC. Er ist Berufskraftfahrer und Lagerist. Er ist Hobbyfotograph und schießt in seiner Feizeit gerne Fotos mit einer seiner professionellen Kameras. Ihr Komplize ist Oliver Dittert. Er wurde 1988 in Hennigsdorf gebohren und am MDC zum Kaufmann für Bürokomminkation ausgebildet. Mittlerweile ist er seit 5 Jahren hier am Campus tätig. Er trifft sich gern mit seinen Freunden, mag es zu lesen und treibt viel Sport.

Hallo Horst, Oliver und Klaus! Was macht ihr hier den ganzen Tag?

Horst: Eigentlich machen wir alle drei das gleiche - wir sind zuständig für die Warenannahme. Von 8-10 Uhr öffnen wir das Lager, dort bekommt man sämtliches Kleinzeug / Verbrauchsmaterial. Danach geht es normal mit der Warenannahme und innerbetrieblichen Transporten weiter.

Wie lange dauert es so im Schnitt vom Eintreffen der Ware bis zu deren Ausgabe?

Horst: Die Waren treffen über den Tag verteilt von 7 bis 15 Uhr ein. Und dann kommt es drauf an… Der Hol- und Bringdienst fängt 11 Uhr an, wobei dieser dann die Waren immer ja nach Bedarf auf dem ganzen Campus ausliefert. Und im Schnitt von der Annahme über die Bearbeitung bis zur Auslieferung dauert es so 1.5-2 Stunden.

Klaus: Wenn wir Schluss machen ist die Warenannahme dann komplett abgearbeitet und leer - bis zum nächsten Tag. Das heißt am Ende des Tages ist dann auch wirklich alles beim Kunden, sofern dieser da war.

Wieviel kommt denn so über den Tag verteilt hier an?

Oliver: Das kann in unserer Statistik genau nachverfolgt werden und so im Durchschnitt haben wir 150-200 Wareneingänge pro Tag, wobei viele Wareneingänge gleich mehrere Pakete umfassen. Z.B. sind 40 Kartons Handschuhe fürs Lager auch eine Warensendung. Insgesamt kommen über 3000 einzelne Pakete pro Monat bei uns an.

Gibt es denn eigentlich einzelne Gruppen oder Abteilungen hier am MDC, die besonders viel bestellen?

Oliver: Das hängt natürlich von der Größe der Arbeitsgruppe ab. So beziehen z.B. die AGs Wanker, Jentsch, Birchmeier, Blanken-

stein, Lipp, oder Gotthardt sehr viel Ware. Neben den Häusern 31.1 und 31.2 beliefern wir auch die Häuser 10, 63, 64, 84, 85, 87, 88, ECRC, das Walter-Friedrich-Haus und natürlich das Tierhaus.

Was war denn so das Größte, ungewöhnlichste oder einfach Lustigste, was in Eurer Zeit hier angeliefert worden ist?

Klaus: Na auf diese Frage hin haben wir natürlich schon hin trainiert *(lacht)*.

Horst: Also ich sag mal so, das außergewöhnlichste in meiner erst kurzen Zeit hier am MDC war auf jeden Fall dieser riesige Froschbehälter aus Amerika - so eine Art Terrarium, der kam auf X riesigen Paletten hier an. Dann hatten wir auch schon Armani Anzüge, wir hatten hier schon Hexenmasken mit Warzen *(alle lachen)* wir hatten Tannenbäume, Tischdeko, Motorradhelme, Kopfhörer, Snowboards, wir hatten eigentlich schon alles *(lacht)*.

Gibt es denn eine bestimmte Zeit im Jahr, wo besonders viel oder besonders wenig bestellt wird?

Klaus: Ganz klar vor Weihnachten, wenn die Konten alle leer gemacht werden müssen, da kommt es schon mal zu einer hohen Lieferfrequenz. Das fängt meist schon Ende September an.

Horst: Oder in den letzten beiden Jahren im Sommer hatten wir quasi ein Sommerloch, da kam extrem wenig rein.

Welche Artikel sind die Dauerbrenner?

Klaus: Handschuhe und Klopapier.

Oliver: Ja und dann natürlich alles, was wir hier auf Lager haben. Dort lagern wir alleine schon ca. 240 verschiedene Artikel. Fast jeder, der zu uns in Lager kommt, nimmt auch Handschuhe mit.

Wie viele Leute arbeiten hier denn eigentlich in der Warenannahme außer Euch dreien und die beiden bekannten Gesichter vom Hol- und Bringdienst?

Horst: Genau genommen arbeiten nur wir drei in der WA. Der Hol- und Bringedienst der die Häuser 31.1/31.2 und das Haus 84 beliefert ist eine externe Firma, nämlich die Firma Rhenus. Herr Joachim als Kraftfahrer liefert die Ware in alle anderen Häuser auf dem Campus.

Hat sich im Vergleich zu früher, sagen wir z.B. im Vergleich zur Zeit vor der Wiedervereinigung viel geändert?

Klaus: Ich war zu dieser Zeit Hausmeister hier und zu meinen Aufgaben zählte damals auch, die Warensendungen zu verteilen. Zu dieser Zeit war es so, dass ein- bis zweimal die Woche eine Lieferung eintraf, die ich dann eben bequem mit dem Handwagen verteilen konnte *(lacht)*.

Freut Ihr Euch privat noch über Pakete?

Alle drei: Klar, natürlich!
Horst: Die Arbeit macht insgesamt ja auch sehr großen Spaß und wir funktionieren als Team sehr gut.

Oliver: Genau, die Arbeit ist vor allem sehr abwechslungsreich - da kommt mal ein schwerer Mikroskoptisch, der eine halbe Tonne wiegt und du weißt erstmal nicht, wohin er soll. Da muss man ad-hoc Lösungen finden.

Klaus: Ja genau, wie bei Mac Gyver im Fernsehen, ist jeden Tag Detektivarbeit und Kreativität gefragt, damit die Ware auch den richtigen Nutzer erreicht. Das ist aber normal und macht Spaß.

Gibt es bestimmte Dinge, die Euch ärgern oder freuen?

Oliver: Ja, nun da wir ja das letzte Glied hier im Einkauf am MDC sind, tauchen bei uns auch zuerst die Fehler auf. Wenn eine Firma dann mal nicht liefert, heißt es schnell, wir haben nicht bestellt, wir haben falsch bestellt oder wir haben nur nicht ausgeliefert. Das ist zum Glück selten, kommt aber vor. Bei solchen Sachen, da bekommen wir schon mal ungerechtfertigte Kritik zu spüren.

Horst: Wir sind natürlich auch immer dankbar für konstruktive Kritik. Denn unsere Arbeit ist sehr Service-orientiert und wir suchen ständig nach Möglichkeiten die Arbeit unserer Wissenschaftler noch mehr zu unterstützen.

Oliver: Ja genau. So haben wir ja auch die Öffnungszeiten im Lager auf vielfachen Wunsch um eine Stunde verlängert. Die Leute kommen ja sehr gern zu uns runter ins Lager. Da wird dann auch mal ein Schwätzchen gehalten oder ein Scherzchen gemacht. Einen typischen Doktoranden erkennt man übrigens z.B. daran, dass er fünf vor zehn völlig verschwitzt in der Tür steht und hechelt. Generell ist es wichtig, dass es Spaß macht zu arbeiten.

Horst: Dann wird dann auch mal das Radio etwas lauter gemacht, wenn AC/DC kommt oder alle 14 Tage so im dem Dreh machen wir auch morgens mal eine schönes Hackepeterründchen mit schön Schrippchen und so. Das ist schön und gehört auch zu einem guten Klima bei uns in der Warenannahme.

Vielen Dank, dass Ihr Zeit für dieses Interview hattet!

STUDENTS COMMENT BOX

What are your ideas for the PhD Newsletter?
What would you like to see on maX?
What would you like people on campus to know?

This is the place for all of that!
We want to include your voice in maX!

Write to us at maXmoeglich@mdc-berlin.de

BERLIN HOTSPOTS

PIZZERIA I DUE FORNI
Great Italian pizza and pasta in a very relaxed atmosphere
Schönhauser Allee 12
10119 Berlin
Phone: 030 - 44017333

KUNSTRAUM KREUZBERG / BETHANIEN
Exhibition space for contemporary art with a focus on current social and cultural issues
Home of the BackJumps Exhibiton !!!
Mariannenplatz 2
10997 Berlin
http://www.kunstraumkreuzberg.de/

GRÜNFISCH
Traditional and modern Sicilian cuisine
Enjoy the great wine selection
Fasanenstraße 42
10719 Berlin
Phone: 030 - 39 37 15 23

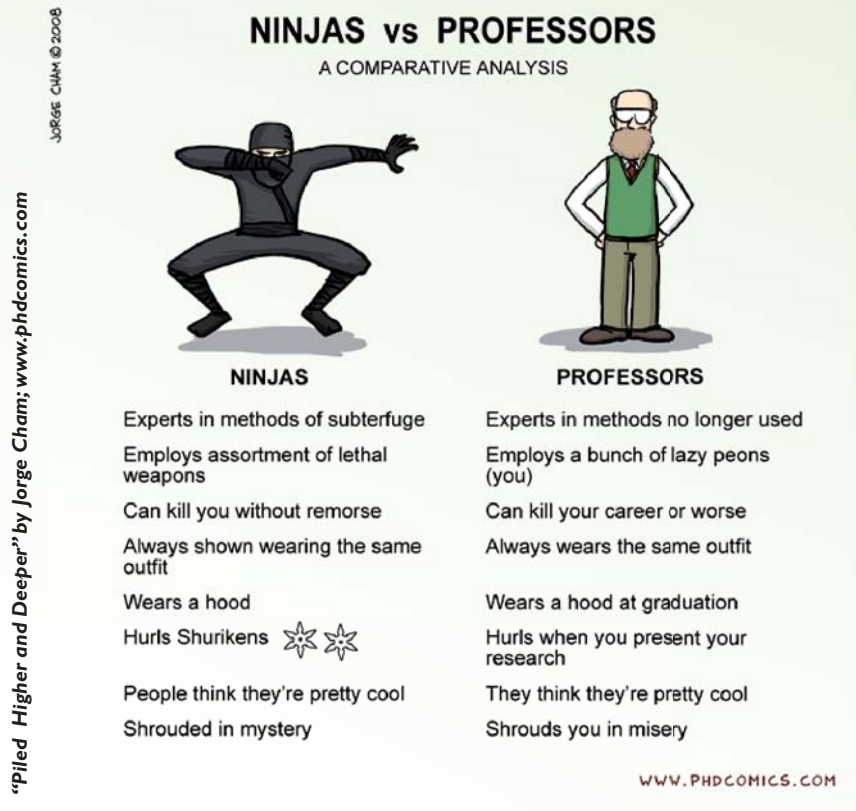
LIQUIDROM
Saunas, swimming pools and wellness to enjoy on a cold day
Möckernstraße 10
10963 Berlin
http://www.liquidrom-berlin.de

SASAYA
Japanese cuisine - One of the best Sushi in Berlin (booking is recommended)
Lychener Straße 50
10437 Berlin
Phone: 030 - 44717721

NOCTIVAGUS
Dark Restaurant, blind waiters will guide you through a meal in complete darkness
Saarbrücker Str. 36-38
10405 Berlin
Phone: 030 - 74749123

BLUE NILE
Ethiopian specialties served on the typical table, the Mesob
Tempelhofer Ufer 6
10936 Berlin
Phone: 030 - 25294655

ARENA BADESCHIFF BERLIN
Go to Sauna on the Spree!
Eichenstraße 4
12435 Berlin
http://www.arena-berlin.de/badeschiff.aspx



"Piled Higher and Deeper" by Jorge Cham; www.phdcomics.com

9th Transgenic Technology Meeting

organized by the International Society for Transgenic Technologies (ISTT)

March 22-24, 2010
Berlin, Germany

TT2010

Confirmed Speakers:

Ignacio Anegon, Univ. of Nantes
Ivar Aune, Sciencewriter, Germany
Michael Bader, MDC Berlin
Herrmann Bauer, MPI Mol. Gen. Berlin
Chuck Donnelly, The Jackson Laboratory Bar Harbor
Jane Farley, The Jackson Laboratory Bar Harbor
Menno Gerkema, Univ. of Groningen
Javier Guillen, AAALAC Europe
Martin Hrabé de Angelis, Helmholtz Center Munich
Thomas Jentsch, FMP Berlin
Ralf Kühn, Helmholtz Center Munich
Carlisle Landel, Thomas Jefferson University
Judy MacArthur Clark, Home Office ASPI London
Holger Maier, Helmholtz Center Munich
Lajos Mates, MDC Berlin
Jennifer Nichols, Univ. of Cambridge
Hans Schöler, MPI Münster
Francis Stewart, TU Dresden
Robert Taft, The Jackson Laboratory Bar Harbor
Teruhiko Wakayama, Riken, Kobe
Lluis Montoliu, CNB-CSIC Madrid
Markus Wöhr, NIMH Bethesda
Wolfgang Wurst, Helmholtz Center Munich
Branko Zevnik, TaconicArtemis Cologne

Abstract Submission: December 31, 2009
Early Registration: January 17, 2010

mouse coat color genetics, cryopreservation, iPS cells, rat ES cells, international projects, rodent models in research, shRNA knock down, running a transgenic facility, transposon-mediated transgenesis, zinc finger nucleases and many more topics ...

TT 2010

ISTT

MDC MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN BERLIN-BUCH IN DER HELMHOLTZ-GEMEINSCHAFT e.V.

www.TT2010.org