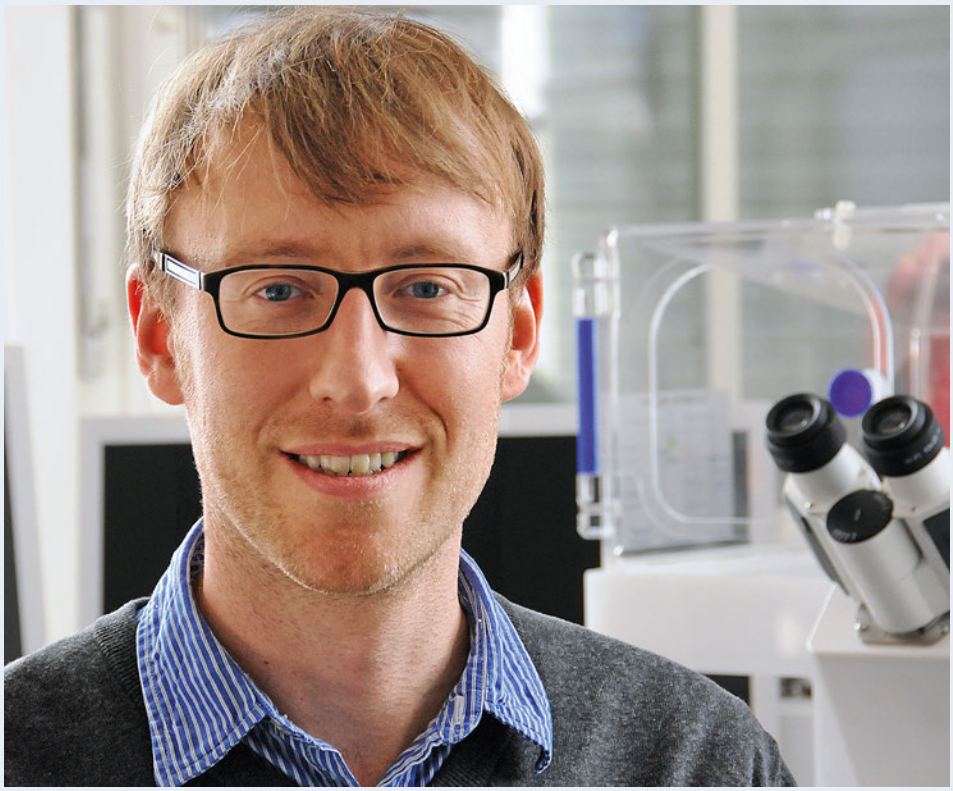
THROMBOSIS RESEARCH AWARD

When the body's own sticking plaster fails

Dr. Markus Bender conducts research into blood clotting disorders. The biomedicine specialist from Würzburg received the Bayer Thrombosis Research Award 2015 for his work on a rare genetic condition.



An eye for blood clotting – Dr. Markus Bender is investigating the mechanisms of a rare platelet disorder. His findings could lead to new possibilities in early diagnosis and treatment.

One slip while chopping vegetables, and it happens – the tip of your finger is bleeding. Our bodies have a clever way of quickly closing the wound: minuscule disc-shaped blood platelets called thrombocytes collect at the edges of the wound and form a tiny plaster. The cells change their shape and aggregate, preventing any more blood from being lost. This is how our bodies deal with minor wounds. In children suffering from Wiskott-Aldrich syndrome, however, this mechanism does not work properly. Their blood has a low platelet count, and the cells are also too small. The young patients bleed easily and often suffer from a weakened immune system and skin conditions such as eczema.

"The condition is caused by a gene mutation," explains Dr. Markus Bender, a biomedicine specialist at the University of Würzburg. The precise mechanisms responsible for this genetic disease leading to a malformation of the platelets were previously unknown. The 35-year-old researcher and his colleagues have now unlocked this mystery. The key is a protein called profilin-1 which stabilizes the skeleton of the cell, ensuring that the platelets take their usual disc form and are able to interconnect to form a clot. The maturing platelets in Wiskott-Aldrich patients lack normally localized profilin-1, which causes a change in the structure of the cell skeleton. These are the findings of the research done by Bender's team, and this could mean new approaches for early diagnosis and treatment of a condition that often has a very poor prognosis.

Bender's research has earned him the Bayer Thrombosis Research Award. The EUR 30,000 prize is awarded in recognition of outstanding achievements by young scientists in the field of thrombosis research. "Dr. Bender's research combines fundamental issues with important clinical questions," says Dr. Frank Misselwitz, Head of Cardiovascular and Coagulation Clinical Research at Bayer. Misselwitz is one of the sponsors of the thrombosis award, along with Dr. Dagmar Kubitza and Dr. Elisabeth Perzborn. In 2009, the three Bayer researchers won the German Future Prize and used the EUR 250,000 prize money to set up the thrombosis award for young scientists. Bayer doubled this starting capital. The award was presented for the first time in 2013.

Mechanisms for malformed platelets discovered

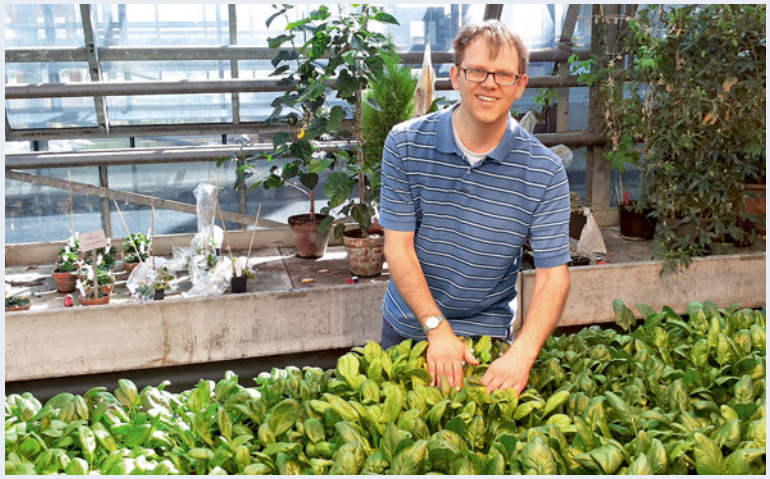
"I intend to use the prize money to raise the profile of my work, and to pursue research ideas that are exciting but also possibly a little risky," says Bender. The German research community has also given Bender a place in the renowned Emmy Noether Program, which will enable him to spend five years establishing his own team of young scientists. This was one of the reasons he came back to Germany after spending two years at Harvard Medical School in the United States. "I had a great time. Boston is a Mecca for research," he says. "But the conditions for pursuing a scientific career are currently more attractive in Germany."

HUMBOLDT SCHOLARSHIP HOLDERS GET TO KNOW BAYER

The other side of science

Young scientists often see few points of overlap between industry and academic research. "For me, industry was a kind of black box," says Dr. Peter Lundquist, a plant biochemist from the United States who is currently completing a postdoctorate at the University of Düsseldorf. However, unlike most up-and-coming researchers, he has had the chance to gain a real insight into the chemical industry. That was possible thanks to a research scholarship from the Alexander von Humboldt Foundation.

Each year, the Bayer Science Foundation funds ten of these scholarships. They give highly qualified young scientists from all over the world the opportunity to spend up to two years working at a research institute in Germany. In addition to participating in the Humboldt Foundation's program, the Bayer Humboldt Fellows also take part in exclusive Bayer events and are assigned an experienced Bayer researcher to act as their mentor. Lundquist has met several times with his mentor, Dr. Michael Metzlaff from Bayer Innovation Relations. "He opened my eyes to how dynamic industrial research actually is and what outstanding scientific work is being done there," says Lundquist. He is currently focusing on fundamental research, studying specific proteins in plant cells that are found in the membranes of chloroplasts – the organelles in which photosynthesis occurs. Thanks to his insight into research at Bayer, Lundquist can now see himself switching to the industrial sector in the future.

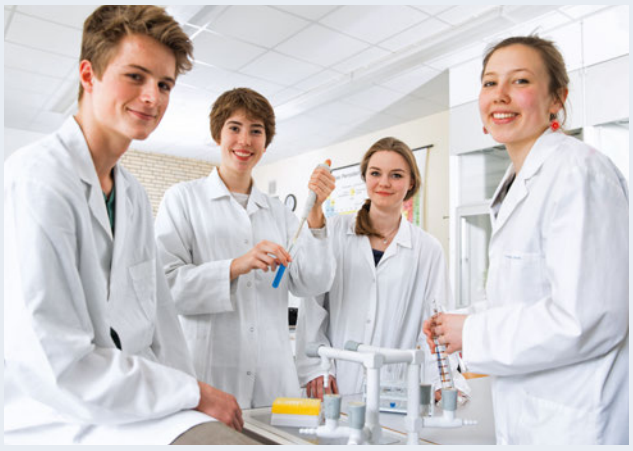


Far-sighted biochemist – Dr. Peter Lundquist is currently working in fundamental research, but also sees opportunities in industry.

BAYER SUPPORTS NCL FOUNDATION

Raising awareness of childhood dementia

Educational initiative sends practice-oriented teaching package on the genetics of rare illnesses into senior high school classes.



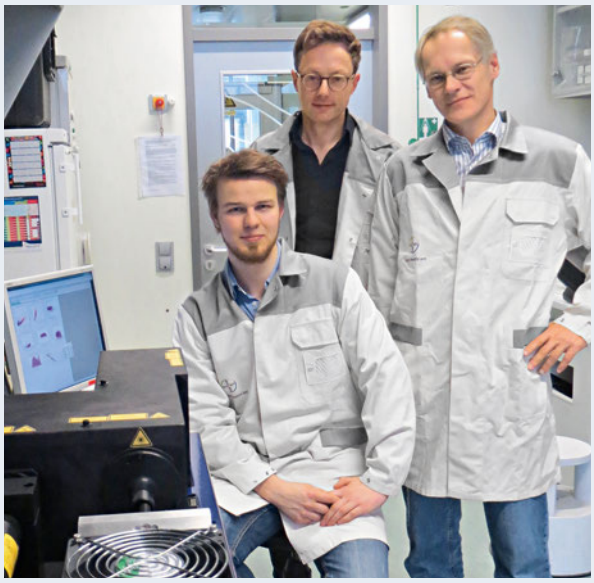
Practical knowledge in the biology classroom: thanks to the NCL Foundation's educational initiative, final year students learn about the genetic background to rare conditions such as hereditary childhood dementia. They also discuss ethical issues.

Neuronal ceroid lipofuscinosis (NCL), also known as Batten disease, is a serious, hereditary metabolic disorder that causes childhood dementia. The condition affects approximately 700 children in Germany and leads to a long-drawn-out death. The primary objective of the Hamburg-based NCL Foundation is to raise awareness of the rare disease among the younger generation. The foundation's educational initiative receives funding from the School Support Program of the Bayer Science & Education Foundation to support its special teaching ideas, which encourage schoolchildren to take a long-term interest in science and progress. The NCL Foundation has worked together with cooperation partners to develop a practice-oriented teaching package for senior high school classes to raise students' awareness of the genetic background to NCL and other rare conditions. At the same time, this initiative also makes clear to them the importance of this gathered knowledge for medicine in general, provides insights into medical professions and also throws up ethical issues. At the end of the course, the final year students themselves become active and organize an information campaign or fund-raising event. In May, the NCL Foundation also won second place in the Bayer Cares Foundation's Aspirin Social Award 2015.

Photos: Bayer AG (1), Gunnar Bartsch (1), Marcus Müller-Saran (1), Michael Rennertz (1), private (2)

Into the research laboratory with the Germany Scholarship

Biochemist Timo Konen received a Bayer-sponsored Germany Scholarship in 2013. This enabled him to concentrate on his studies and also provided an insight into industrial research. research spoke to him about his experiences.



Looking into the laboratory – Timo Konen (left) gathered experience in industrial research at Bayer HealthCare in Berlin. He joined the team of Dr. Oliver von Ahsen (right) as an intern. He also received support from the Bayer foundations, whose Managing Director is Thimo V. Schmitt-Lord (center), in the form of a Germany Scholarship.

What exactly is a Germany Scholarship?

These new scholarships have only been around since 2011. Universities award them directly to the recipients, who receive EUR 300 a month for at least two semesters – half of this comes from the federal government, and the other half is sponsored by a company.

How did you become a recipient of a Germany Scholarship?

I studied biochemistry in Hanover. I applied for the scholarship at the beginning of my Master's course. However, I was only successful second time round.

Did you also benefit from the contact with Bayer?

Yes, after graduating, I was able to fit in an internship at the Bayer Research Center in Berlin. I worked in Dr. Oliver von Ahsen's Global Biomarker Research department. The Bayer Foundation made the initial contact for me, which made my application easier.

What were you working on in Berlin?

I helped on two projects, and also carried out my own experiments. One thing we were looking at was circulating endothelium cells. These are cells that are found in small numbers in the blood when certain cardiovascular diseases are present, and can therefore be used as a diagnostic marker. In the other project, we determined the counts of a tumor gene that is needed for tumor cell growth. These threshold values are vital for subsequent therapy decisions.

What are your plans now?

During my internship, I discovered that industrial research is much more targeted, and to some extent it is also more efficient than research at university. Nonetheless, I still intend to finish my doctorate in the academic sector. There is a much broader scientific dialog going on there. That does not mean that I would rule out taking on a job in the industrial sector at a later date.

The Bayer foundations – committed to progress since 1897

Bayer foundations have been promoting education, science and social innovation all over the world since 1897. As part of the innovation company Bayer, the foundations see themselves above all as initiators, promoters and partners for progress at the interface between industry, science and the social sector. Their programs are focused on pioneers – their commitment to public welfare, their wealth of ideas in resolving social tasks, and their creativity in the fields of science and medicine. The Bayer Science & Education Foundation, for example, grants scholarships and awards which encourage young talents and top researchers alike to deliver outstanding achievements in their field. The Bayer foundations also support efforts to resolve social issues. For example, the Bayer Cares Foundation focuses on citizens' projects and resolving issues in the field of social medicine. The objective of the foundations is always to improve human life through innovation and initiatives.

www.bayer-foundations.com
Visit this site to apply or to obtain more information (see back cover flap).

GLIMMER OF HOPE FOR CHEMO PATIENTS

Cooling against hair loss

Of the many side effects of chemotherapy, hair loss is perhaps the most obvious and dreaded. "It tells everyone that you are suffering from a life-threatening disease," says Dr. Trudi Schaper, chairperson of the breast cancer self-help group ISI (Internationale Senologie Initiative) in Düsseldorf.

Since the beginning of 2014, patients at the breast center in the Luisenkrankenhaus hospital in Düsseldorf have had an opportunity to keep their hair by wearing a cooling cap during chemotherapy. The cap cools their skin to 19 to 22 degrees Celsius, which reduces blood circulation at the hair roots. As a result, fewer of the chemotherapy toxins get through to the sensitive cells.

This cooling system was financed by the ISI self-help group with the support of the Bayer Cares Foundation. As part of its voluntary program, the Bayer foundation is providing EUR 5,000 to support the project. "Demand is enormous among the patients," says former Bayer employee and psychologist Monika Puls-Rademacher, who works for ISI as a voluntary patient advisor.

The Internationale Senologie Initiative is documenting the conditions under which the treatment is successful. "We hope to reach a point where health insurers will pay for this in future," says Puls-Rademacher. "We are therefore collecting as much data as possible to prove that it is successful." The "ISI cares for hair" initiative was one of the eleven finalists for the Aspirin Social Award.

Protective headgear – at the Bayer foundations dialog in Dormagen, Monika Puls-Rademacher (left) and her colleagues showcased the cooling cap that protects breast cancer patients from losing their hair.

HELP FOR TEENAGE MOTHERS IN PERU

Routes out of poverty

Although there has been positive economic development in Peru over the past few years, poverty and malnutrition are still widespread. In the slums around the capital Lima in particular, there is a high rate of teenage pregnancy. It is very difficult for these young women to find a way out of poverty.

Help for the little ones – Diana Saenz (center) fights poverty and malnutrition in Peru. She helps young mothers prepare meals for their children and earn a living.

As a result, the South American foundation CONIN – which stands for Cooperadora para la Nutrición Infantil, or cooperative for child nutrition – has set up a training program for teenage mothers in the Nueva Rinconada slum. "The program is about more than just teaching these young women how to run a household and prepare a healthy meal," reports Diana Saenz, Head of Country Administration & Organization at Bayer HealthCare Peru. "We also want to boost their self-esteem, assertiveness and empathy." Ideally, the program aims to enable the young mothers to earn a living running small businesses or as domestic help.

Students, teachers and parents from the Casuarinas International School, which Saenz's son also attends, do voluntary work for the project. The mothers who volunteer show the young women how to cook, iron and give first aid, for example. The Bayer Cares Foundation has ensured that the group can provide the utensils needed for cookery courses. A donation of EUR 3,500 was used to convert existing rooms into a teaching kitchen. Adds Saenz, "Thanks to amazing support from Bayer, CONIN can now improve the training, personal development and job opportunities offered to teenage mothers as part of this program."