

Resource: Health

September 2016
SPECIAL PUBLICATION FROM THE BAYER FOUNDATIONS



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Gymnastics

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Money, success, good grades? No – for many, health is the most important thing in life. Everything else depends on this factor. Preserving it is an important task.

Tuberculosis. Thanks to antibiotics and good medical care this disease is no longer a serious danger in Germany any more.

Things were very different back in the 19th Century. Back then, a diagnosis of tuberculosis was often a death sentence.

Particularly the poorer population became victim to the “white plague”. Friedrich Bayer wanted to change this. One of the first Foundation programmes that the Bayer founder launched back in 1879 therefore aimed to better protect his employees and their children against tuberculosis.

Bayer was not only concerned with protecting his labour

force. He took his social responsibility as an employer seriously. Today, the law mandates that companies must protect the

health of their workers. Many companies have even developed their own health programmes. The content ranges from flu vaccinations to posture training and sports courses.

“Health is the most important resource that we have,” says Thimo Schmitt-Lord, Chairman of the Bayer Foundations. Indeed, only those who are healthy, feel

fit. Our health can influence, for instance, what occupations we

can pursue. And work provides the economic basis for participating in society.

Good health and, importantly, staying healthy are highly valued in Germany. Pupils are noticing this too: For instance, when the school dentist regularly comes around for a visit, or in the form of healthy school breakfasts. Or perhaps the coordination tests administered in sports class or that addiction prevention presentation during a project week.

Many people are involved in promoting good health. These include doctors and scientists as well as public employees, teachers and inno-

vative entrepreneurs. The Bayer Foundations want to support these people. We provide some examples on the following pages.



Founder Friedrich Bayer was a big believer in healthcare.

“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family.”

Article 25 of the Universal Declaration of Human Rights

According to the latest surveys, health is very important to youths.

IMPRESSUM

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Layout: Sandra Janzso

Gap closed

Medical student Simon Link (24) developed a medical care station for refugees in Berlin during his work with the German Red Cross (DRK).



Simon Link.

What does your care station consist of?

We have a room at a shelter, a sports hall in Berlin-Steglitz, that is arranged to resemble a normal doctor's office. With the help of donations, we built up a basic stock of medicines, infusions and bandages. Doctors from the German Red Cross and the surrounding area hold voluntary office hours there. We also established a 24-hour background service, where non-medically trained refugee counsellors can answer questions.

What inspired this idea?

I have been volunteering with the DRK in Berlin-Steglitz for six years. So I was working at the shelter when the refugee situation started in the summer of 2015. We quickly realized that there was a gap in medical care for the people there. In true emergency situations, they of course received help – but visiting a normal doctor involves major bureaucratic hurdles. So those with a cold, or smaller wounds, fever or diarrhoea, don't really know where to go. We wanted to close this gap.

Many shelters are currently closing down. What will happen with your project?

We want to expand our concept into a kind of mobile care station. It would be available whenever emergency shelters find themselves filling up: for instance, with the homeless during a harsh winter or people affected by a natural catastrophe. And, of course, for another wave of refugees.

What have you learned from the project?

I have become familiar with many activities that are not part of my normal routine as a DRK volunteer or medical student. Since I've handled a lot of the organizational tasks in the background, I've learned a great deal about the medical system in Germany.

But above all, I have seen how valuable pragmatism is in emergency situations. We noticed a gap and we simply started to do something about it without thinking about it too much. We were determined and kept making calls, gaining contacts. To know that we are helping these people, who have undergone so much, is a nice feeling.

Need recognized

The start-up RSO Shift has developed a solar-powered treatment device that cleans, disinfects and sterilizes surgical instruments. It can provide valuable assistance in developing countries.

The energy technology engineers Philipp Odernheimer (28) and Raphael Schönweitz (29) and economist Martin Deer (34) share a pretty good characteristic: When they notice a flaw, they want to change it. In their case, it relates to the provision of medical care in developing and emerging countries. "During a period of study in Africa, I saw how often doctors and nursing staff had to improvise – particularly when working in rural areas," explains Schönweitz. Since rural health stations are not usually connected to a stable power supply, physicians often have to clean their surgical instruments in pots of hot water heated over a wood fire. This can have terrible consequences – such as infections or the transmission of serious diseases.

The men began to plan and developed the idea for the LifeShift Sterilizer. The 1.20-metre-high mobile device can clean, disinfect and sterilize medical products. It also includes a water treatment plant that distils water on site. But perhaps the most important feature is its solar panels. This allows the device to be operated independently of the electric grid in sunny regions.

The Kassel-based company will soon start field testing in Africa with a prototype. "We want to see if the people there will be able to operate the device and whether we still need to improve something," explains Martin Reh. The LifeShift Sterilizer should go into series production in



Healing with light?

The chemistry professor Dirk Trauner is a pioneer in the field of optogenetics. His research could eventually help doctors combat serious illnesses in a more targeted manner.

Dirk Trauner took a winding path to discover his passion for chemistry. Art was his favourite subject in school. He also developed an interest in biology during later grades. After completing his A Levels, the Linz native considered staying true to his love of art and studying architecture. “But I wound up making a spontaneous decision in favour of biology,” says the 49-year-old. A chemistry internship during his second semester, though, changed everything.

“The internship was about synthesis, meaning the attempt to create something entirely new from existing material. That interested me from the start,” remembers the current Chemistry professor at LMU in Munich. He ended his studies in Austria and applied for a chemistry degree in Berlin. That was back in 1992. The Berlin Wall had just come down a few months earlier. “Somehow it all fit together – a completely new city was developing in Berlin and I was also engaged in creating something new with my studies,” he grins.

He has remained true to this aim and enjoyed great success. Trauner is considered a pioneer in the fields of photopharmacology and optogenetics. His results may eventually help doctors heal serious illnesses such as blindness or cancer. But



Chemistry professor Dirk Trauner.

what exactly does Dirk Trauner do? “Put simply, we have developed a kind of synthetic light-activated switch that allows biological processes in the body to be controlled by light,” explains the scientist. Let’s take blindness for example: A switch could be implanted directly in the retina, restoring the eye’s sensitivity to light. The patient would then be able to see again. “And in the case of cancer, it is conceivable that such a switch could be used to slow or even stop cell division,” says Trauner. Using special medications, the switches would be transported to the exact place in the body where treatment is needed. A special light is used to then activate the switch. “This

would be a much more precise form of cancer treatment with fewer side effects than chemotherapy for instance,” explains the researcher.

The possibilities of optogenetics are extremely diverse. Trauner believes that even completely new senses could be developed. It is these kinds of possibilities that continue to nourish his passion for the natural sciences. “We can conceive the seemingly impossible and then work to make it a reality.” He highly recommends that pupils take biology and chemistry. “There are going to be some amazing discoveries and inventions emerging from this field. Plus, these subjects provide you with a deeper understanding of life and the world.”

In some ways, Professor Trauner did remain an artist after all. Indeed, new creations are regularly emerging from his laboratories.



For his research, Dirk Trauner received this year’s Otto Bayer Award from the Bayer Foundations. The award ceremony took place at the Foundations’ Alumni Dialog in Berlin this past June. Former and current (Alumni) fellows and award winners meet at this conference to connect with each other and with Bayer experts. “The world is better with science” was the main theme this year. The role of science in healthcare was also a key topic.

Health in the classroom



Berlin pupils in the simulated operating theatre at the German Heart Centre

A growing number of schools are discovering medicine and health as a project topic.

The schedules are tightly packed. Maths, German, languages, social and natural sciences, art and music. This means that health and medicine are left grasping for the few remaining gaps in the timetable. "It is the task of the entire school – not just biology classes – to support healthy behaviour and self-determination," says Annette Upmeier zu Belzen, Biology professor and member of the panel for the Bayer Foundations' school support programme. The more young people know about healthy living, the more they can take informed decisions regarding their own behaviour. They also learn about professions in the medical field. In light of these benefits, an increasing number of schools are taking the initiative and starting their own projects focused on these topics.

This includes for instance Gymnasium Bergkamen. Here, the teachers are using sports to generate enthusiasm among their

pupils for medicine. With cutting-edge ergometer, the youth check their own strength and capabilities. Next, they create a tailored training plan. Later, they test themselves again and note the changes in their bodies. "Thanks to these tests, pupils are learning how organs and metabolism work," explains biology teacher Ulrich Stauch.

The Humboldt-Schule in Kiel wants to help its pupils better understand the effects of ageing this school year. "In view of the demographic changes occurring, there will be a growing number of elderly individuals who suffer from age-related maladies," points out project leader Manuel Raschke. Among other things, the youth try on age-simulation suits in PE, which allow them to experience some of the effects of ageing. In maths class, pupils assess the results while project participants from other MINT classes attempt to develop medical solutions and aids for the elderly.

Health may not be everything, but without health, everything is nothing.

Arthur Schopenhauer, German philosopher

GenaU, a student lab network for pupils in Berlin and Brandenburg, offers a special medical tour called "Experiments of the Heart". During the project at the end of the first semester, pupil groups from Sek II visit a different student laboratory or Berlin-based company each day and get to know the heart from various angles. At the German Heart Centre, for instance, participants could simulate a heart operation, while a tour at the Carl Zeiss Microscopy Centre focused on the evolution of blood circulation. "We lost all sense of time and spent an afternoon completely immersed in a world that both informed and inspired us," raved Berlin pupil Lina Below.

Bayer school support

The Bayer Foundations support teachers in the vicinity of Bayer sites who want to make medical professions and natural science classes more attractive via innovative projects. Each year, they provide a total of 500,000 euros in funding. The current deadline for applications ends **February 2017**. **More information at:**
bayer-stiftungen.de
 -> science@school