

Merck KGaA
Darmstadt, Germany

points of pride

Corporate Responsibility 2016



who we are

We live in a world of possibilities. A world where exploration and discovery are celebrated. Our meticulous and research-driven businesses deliver diverse, high-quality products that enrich lives and enable us to share business success with our customers.

Founded in Darmstadt, Germany in 1668 by Friedrich Jacob Merck, we are the world's oldest pharmaceutical and chemical company. Today, the Merck family remains the majority owner of the firm.

Over the course of nearly 350 years, we have become a truly global company. Our approximately 50,000 employees across 66 countries are united by their passion for new ideas, the possibilities of technology, and the potential to make a difference in the world.

We are known as Merck internationally. In the United States and Canada, however, we operate as EMD Serono in our Biopharma business, as MilliporeSigma in our Life Science business, and as EMD Performance Materials in our materials business.

We reported record results for 2016: Net sales of Merck KGaA, Darmstadt, Germany increased sharply by 17.0% to € 15.0 billion (2015: € 12.8 billion). EBITDA pre exceptionals, our key earnings indicator, climbed 23.7% to € 4.5 billion (2015: € 3.6 billion).

Advancing technologies for life

Across healthcare, life science and performance materials, we bring high-quality, specialty products to the world.

Healthcare

From prescription medicines to treat conditions such as cancer, multiple sclerosis and infertility to over-the-counter products developed to help protect every member of your family: our goal is to make a difference to millions of lives around the world.

Life Science

Providing scientists and engineers with best-in-class lab materials, technologies and services, we are dedicated to making research and biotech production simpler, faster and safer.

Performance Materials

Developing specialty chemicals for particularly demanding applications, we provide groundbreaking liquid crystals as well as OLED materials for displays and lighting, effect pigments for coatings and color cosmetics, and high-tech materials for the production of integrated circuits.

we take responsibility

And have been doing so for nearly 350 years. Acting responsibly means looking, listening and doing things better. We respect the interests of our employees, customers, shareholders, and society, an approach that ensures our business success. This integral pillar of our corporate strategy in turn underpins our corporate responsibility (CR) strategy, the basis for the responsible governance we live each and every day.

In fulfilling our corporate responsibility, we focus our strengths on those areas where we can achieve the most. We pursue three strategic spheres of activity, namely health, environment, and culture & education. In the process, we are always focused on doing what's best for the future of society while also securing our competitive advantage.

“We work each and every day on new technologies that enrich lives and make our customers and partners more successful – and have been doing so for nearly 350 years. Our long history has taught us that responsible corporate conduct is key to a successful future.”

Stefan Oschmann

Chairman of the Executive Board and CEO



enrich lives

In low- and middle-income countries, many people do not have access to high-quality health solutions. This is where our expertise comes in. Hand in hand with strong partners, we develop solutions for people at the point of care to tackle issues such as the worm disease schistosomiasis in Africa. Beyond these efforts, we also work to increase health awareness through education campaigns and by providing vocational training and continuing education for healthcare professionals.

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"My son wasn't diagnosed with a thyroid disorder until later on. Thanks to proper treatment, he is now doing much better. I would like for parents and health workers here in Indonesia to be better educated about thyroid disease."

Dr. Shinta Primasara,
physician and mother from
North Sumatra, Indonesia

To read the full story, visit:
emdgroup.com/health



Small organ, big IMPACT

84% of mothers affected worldwide cannot correctly identify the most common symptoms of thyroid disease in their children. This poses a major risk because untreated thyroid disorders can adversely affect a child's growth, brain development and general wellbeing. Educating parents was therefore the focus of the 2016 International Thyroid Awareness Week campaign we spearheaded in collaboration with Thyroid Federation International (TFI).

Catching Butterflies

Through a joint campaign with TFI entitled "Catching Butterflies: Spotting the Symptoms of Thyroid Disorders in Children", we taught parents how to recognize the typical symptoms of thyroid disease in their children. Worldwide, 34 sites of Merck KGaA, Darmstadt, Germany supported the campaign by hosting a variety of their own awareness activities.



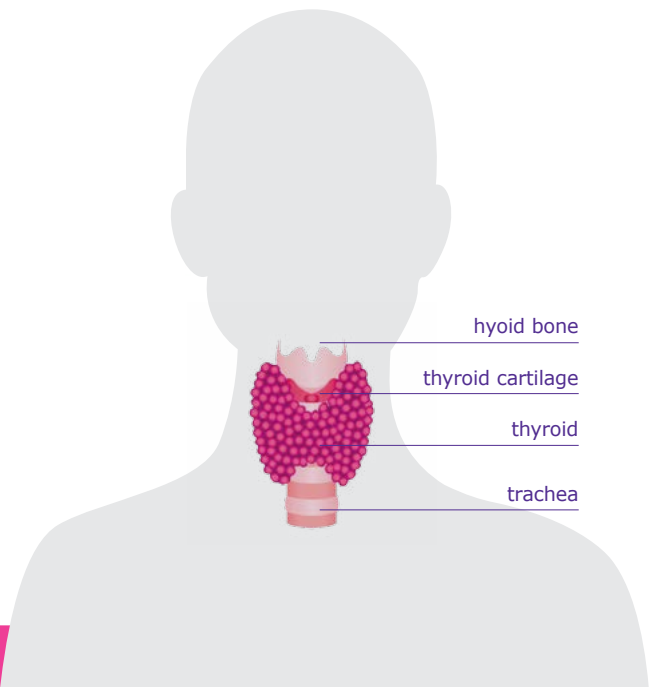
The control tower of the metabolism

The butterfly-shaped thyroid gland is the primary regulator of the body's metabolism. Through its hormones, this gland controls all bodily tissues and organs. If a person has a thyroid disorder, their thyroid gland is either producing and releasing too much hormone into the bloodstream (overactivity/hyperthyroidism), or too little (underactivity/hypothyroidism).

Around

20 million

In 2016, we reached approx. 20 million people through our worldwide thyroid awareness campaigns.

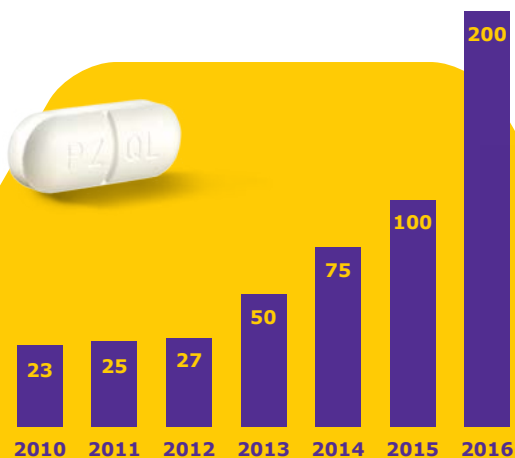


ELIMINATING SCHISTOSOMIASIS

Schistosomiasis is a devastating neglected tropical disease that impacts more than 200 million people worldwide. Over 280,000 people die each year from the effects of this parasitic infection, the vast majority of whom live in Sub-Saharan Africa. Hand in hand with our partners, we are working to eliminate this insidious disease.

100 million

To date, our tablet donations have allowed 100 million children in Africa to be treated for schistosomiasis.



Number of tablets donated to WHO, millions

Researching, educating, collaborating

Our active ingredient praziquantel is the gold standard for the treatment of this disease. We have been donating praziquantel tablets to the World Health Organization (WHO) for distribution in Africa for ten years — more than 500 million to date. However, praziquantel cannot be administered to children under six because it is not formulated for this age group. We have joined forces with partners from research institutes and industry in an effort to fulfill this unmet need. We are also working to raise schistosomiasis awareness in African schools through comic books and posters. Furthermore, at the end of 2014 we launched the Global Schistosomiasis Alliance (GSA), which seeks to address remaining gaps in the fight against this parasitic infection. Founding members include organizations such as the Bill & Melinda Gates Foundation and the United States Agency for International Development.



FIGHTING DANGEROUS MOSQUITOES

According to the World Health Organization (WHO), approximately 212 million cases of malaria are reported every year, with roughly 429,000 of them resulting in death. But mosquitoes also spread other infections that therefore pose a particular danger in tropical regions, among them dengue fever and, most recently, the Zika virus. Zika is especially dangerous to unborn babies and, if the infection occurs during pregnancy, may cause microcephaly in infants. Effective protection against mosquito bites is the best way to prevent infection.

Repelling mosquitoes

Our compound IR3535[®] is the perfect solution. Since it keeps mosquitoes and other insects at bay, it works well as an insect repellent. When applied to skin, mosquitoes steer clear because they dislike the scent. Thanks to this effect, IR3535[®] has been protecting against the transmission of dangerous diseases for many years. Unlike competing products, repellents containing this compound are well tolerated by pregnant women and toddlers.



Mosquitoes of the species *Aedes aegypti*, also called the yellow fever mosquito, occur in the tropics and subtropics and are the primary carriers of various viral infections such as yellow fever, dengue fever and the Zika virus.

DETECTING COUNTERFEITS

Developing countries are plagued by a deadly danger: illegal and counterfeit pharmaceuticals. Interpol estimates that up to 30% of all medicines fall into this category. We support the Global Pharma Health Fund (GPHF), a non-profit initiative that aims to alleviate this problem. Our weapon in this fight is the Minilab, a mobile, compact laboratory developed by the GPHF that fits into a tropics-resistant suitcase. With this kit, counterfeit medicines can be detected quickly, easily and cheaply.

The GPHF provides its Minilabs at cost. Since 1998, the organization has supplied more than 800 Minilabs across 95 countries, especially in Africa and Asia. These test kits are primarily deployed by national health agencies, often in collaboration with governmental drug safety laboratories.

This is a Minilab. The suitcase contains up to 85 reference standards and roughly 150 pieces of laboratory equipment and materials needed for the testing of active pharmaceutical ingredients. Contents include items such as a full range of glassware, ultraviolet lamps, pipettes, and hot plates.

85

active pharmaceutical ingredients: The Minilab is currently equipped to test drugs for 85 active pharmaceutical ingredients, verifying drug identity and content in a variety of medicines from antimalarials and antibiotics, to analgesics and antipyretics. The GPHF is continuously working to develop new tests for further active ingredients.



EXPLORING THE FUTURE

We strive to continuously enhance the sustainability footprint of our products. In doing so, we also help our customers achieve their own sustainability goals. Take, for example, the development of new liquid crystal technologies. When used in displays, our liquid crystals help smartphones and tablets save power.

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"In terms of my work, my greatest passion is developing new ideas and sustainable products. I am particularly excited about our latest innovation: switchable, energy-saving liquid crystal windows, which we are in the midst of launching."

Johannes Canisius,
head of the Liquid Crystal Windows business field in our Performance Materials business sector.

To read the full story, visit:
emdgroup.com/environment



LOOKING INTO THE FUTURE

We are the global market and technology leader in liquid crystal materials that reduce the energy consumption of smart-phone and tablet displays. This means that wherever people are, they can enjoy brilliant images for longer. But we know that our liquid crystals are capable of so much more. For example, we can use them to tint windows like a pair of sunglasses. In other words, light still comes into the room, but without blinding the occupants. And the heat stays outside, saving energy and resources. Air conditioning, lighting, blinds, and curtains thus become largely redundant. We are currently investing approximately € 15 million in the construction of a production facility for liquid crystal window modules in Veldhoven (Netherlands).

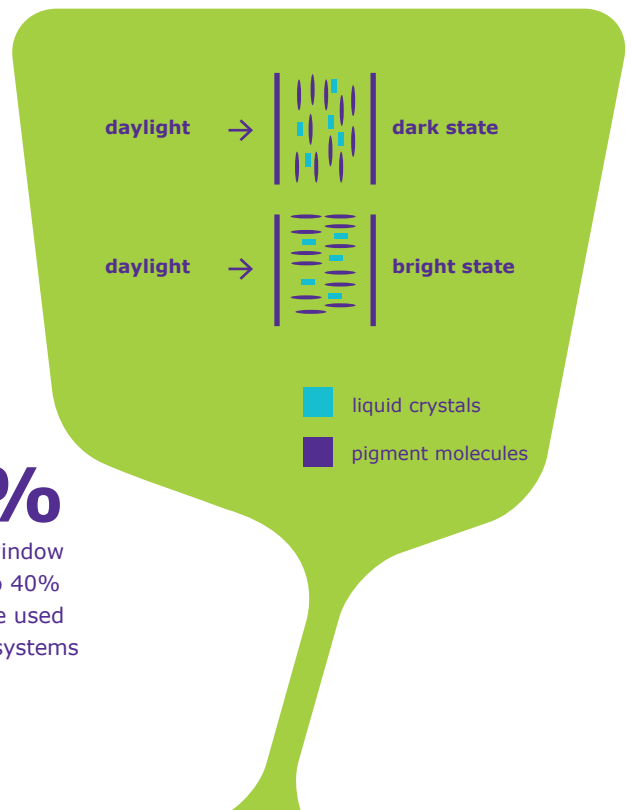


Up to **40%**

Our liquid crystal window modules save up to 40% of energy otherwise used for climate control systems and lighting.

How does it work?

A mixture of liquid crystals and pigment molecules is placed between two panes of glass. When an electric current is applied at the touch of a button, the liquid crystals arrange the pigment molecules so that they allow in more or less light, depending on their positioning. This controls how translucent the window is. If it's set to "bright", the light penetrates the window. If darkened, light and heat are absorbed – but it's still possible to see through the glass.



Around

€ 30 million

We have invested approx. € 30 million in our new production plant for OLED materials at our site in Darmstadt.

Lighting the way

Organic light-emitting diodes (OLEDs) are small energy miracles. These semiconducting organic materials light up when an electric current is applied – and use very little energy in the process. What's more, OLED displays also provide brilliant colors and sharp images from any viewing angle. Just like OLED lighting, they have a long lifespan, are thin and can be bent. They are thus opening the door to completely new applications such as undulating display panels at airports, or windows with integrated displays and lighting.

In summer 2016, we commissioned a new production plant for OLED materials at our site in Darmstadt. We aim to become a leading supplier of OLED materials, providing many of the necessary chemical materials from a single source. We are also working on inks for printable OLED displays, which will enable the manufacture of large flexible or rollable displays for applications such as video walls and cars.



Ultra-thin OLED materials provide brilliant colors and luminosity. At the same time, they are extremely energy-efficient and, thanks to their flexibility, will someday be used in smartphones with unique new shapes.

Thinking holistically

We consistently work to improve the sustainability footprint of our products. When developing new products – especially equipment and instruments for our Life Science business sector – we analyze both our own environmental impacts as well as the impact of customer product use. Through our Design for Sustainability program, we help customers using our products to consume less energy, water and raw materials, as well as reduce waste. In this way, we are helping them achieve their own sustainability goals.

Take, for example, our EZ-Fit™ Manifold filtration system, which is used for applications such as microbiological water testing in the food and beverage industry. In comparison with its predecessor, it is lighter and easier to clean, thus reducing our customers' environmental impacts. Unlike the previous model, which had to be completely sterilized, the current EZ-Fit™ Manifold filtration heads can be easily removed and sterilized separately.



In 2016, the EZ-Fit™ Manifold was honored with the Green Good Design Award.



47%

weight reduction over predecessor thanks to lower raw material consumption.

91%

fewer CO₂ emissions are produced when our customers clean the system.

Up to 99%

of the EZ-Fit™ Manifold is recyclable.

RECYCLING

Many of the products that we supply to our Life Science customers are used only once and then discarded, which is necessary to minimize the risk of contamination. The majority of these products contain plastics that are not easy to recycle.

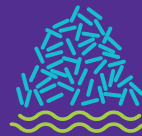
There are several reasons for this, such as a lack of recycling options, problematic material properties and strict regulatory requirements. In light of these issues, we consistently look for ways to keep environmental impacts to a minimum. As part of these efforts, we have been partnering since 2015 with Triumvirate Environmental, a waste management firm based in Massachusetts (USA).

This company has developed an efficient process for recycling challenging waste streams in which the product waste is 100% recycled without having to separate the various materials beforehand. Several of our Life Science customers on the East Coast of the United States are currently using this process to recycle their product waste. Since launching the program in 2015, we have recycled more than 450 metric tons of disposable products in this way.

The recycling process



1. The waste generated by our Life Science customers is collected.



2. Triumvirate Environmental shreds the waste and melts it down.



3. The result is a malleable mass that is used to make new products such as speed bumps.

Foster talent

Scientific progress thrives on the curiosity of researchers, which is why we are committed to sparking a passion for science in the next generation. We are engaged in an array of education projects around the world and provide talented young individuals with support such as scholarships. Furthermore, we promote cultural initiatives in an effort to inspire people and broaden their horizons.

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"Since I was a young boy, my dream was to become a doctor and help people. Thanks to the scholarship from Merck KGaA, Darmstadt, Germany, I made my dream come true – even though we didn't have enough money."

Bhavya Vijay Vakil,

Second year resident, MD Anesthesia,
Tata Memorial Hospital, Mumbai, India

To read the full story, visit:
emdgroup.com/culture



MAKING DREAMS COME TRUE

Young and talented? In developing and emerging countries, that is often not enough. Many gifted individuals in these parts of the world cannot afford an education. But we are working to change this. In those regions where we operate, we are helping young people pursue their goals, especially in the fields of science and technology.

Springboard to a university degree

In 2005, we founded the Merck India (Mumbai), a subsidiary of Merck KGaA, Darmstadt, Germany Charitable Trust (MICT), which provides underprivileged students in India with a scholarship totaling around 35,000 rupees (approx. € 500) per year. Covering a period of five to seven years, this is generally enough for recipients to pay for their tuition fees and study materials. Since the program's launch in 2005, 54 students have successfully completed their degree and found good jobs, primarily in the fields of IT and medicine.

"Even as a child, I was fascinated by electricity. I knew that I wanted to study electrical engineering. The Merck KGaA, Darmstadt, Germany Scholarship Program helped me cover the high cost of a university degree. I would like to use my knowledge and expertise to help India grow."

Pranjal Rajaram Hande,
electrical engineering student
at K. J. Somaiya College in
Mumbai, India

275 students

We are currently enabling 275 students in Mumbai and Goa, India to pursue university degrees.



PURSuing CURIOSITY into the future

As a science and technology company, we need young talent that shares our curiosity and passion for innovation. We are therefore committed to inspiring children and teenagers worldwide to explore the sciences, promoting a number of educational projects – particularly in the communities around our sites. In the vicinity of our Group headquarters in Darmstadt, we work in close partnership with schools to support educational initiatives in the fields of biology, chemistry, physics, and technology.

Laboratory fun

Gilding copper coins, removing rust from iron, isolating pigments from carrots: students love to experiment. In our top-notch Junior Lab, they have ample opportunity to do so. A joint venture with the Technical University of Darmstadt, the lab is perfectly equipped for school classes. In October 2016, we launched a similar initiative for biology known as the “live BioLab”, which links classroom lessons with trending topics and modern methods of biology research.

Jugend forscht: Three decades of pioneering spirit

Jugend forscht is Europe’s biggest youth competition in the field of science and technology. We have been supporting this initiative for more than 30 years and have been hosting the state-level competition for the German Federal State of Hesse since 1996. We have also hosted the nationals twice. Incidentally, 80% of the Hessian Jugend forscht competitors came from schools with which we partner.



Transcending boundaries

Many people are skeptical when it comes to science, research and change. We believe that literature can expand people's horizons. We value authors who use their writing to build bridges between literature and science – or between cultures – thereby making scientific topics more relatable to the general public. To recognize the contributions of such writers, we award five literary prizes, specifically in Germany, India, Italy, Japan, and Russia.

Italy: Our Premio Letterario

In Italy, we awarded the 2016 Premio Letterario of Merck KGaA, Darmstadt, Germany to Italian immunologist Alberto Mantovani and to British naturalist and author Helen Macdonald. The jury stated that, in his paper "Immunity and vaccines", Mantovani takes readers on a "journey of discovery through advances in research". In her novel "H is for Hawk", Macdonald describes her experiences raising a goshawk. According to the panel, she combines "strongly naturalistic abilities with literary imagination".

Russia: Translators take center stage

In September 2016, we presented the first-ever Merck KGaA, Darmstadt, Germany Translation Award in Russia, a prize that recognizes translations of German literature into Russian. We partnered with the Goethe Institut of Russia to launch this initiative. When it comes to cultural exchange, translators play a key role, serving as ambassadors between different cultures.

28 prizes

Since 2003, we have presented 28 prizes along with eight honorable mentions and special prizes under the auspices of the Premio Letterario of Merck KGaA, Darmstadt, Germany.

OUR SWEET SYMPHONY

What began 50 years ago as a company ensemble is now a professional symphony orchestra. Founded in 1966, the Deutsche Philharmonie Merck, sponsored by Merck KGaA, Darmstadt, Germany has long been an integral part of cultural life in the vicinity of our Group headquarters in Darmstadt and also regularly goes on international concert tours. Because we want to spark children's interest in classical music, we offer workshops that give young people the opportunity to experience playing in a professional orchestra.

Classy meets cool

Cool kids and elegantly attired adults together at the same concert? This juxtaposition works just fine, as proven by the 2016 "HipHop trifft Klassik" concert our orchestra performed together with Einshoch6, a Munich-based hip hop band. The audience at the Frankfurt Jahrhunderthalle represented a cross-section of all ages.

24,000

people attended the concerts given in 2016 by the Deutsche Philharmonie Merck, sponsored by Merck KGaA, Darmstadt, Germany.



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