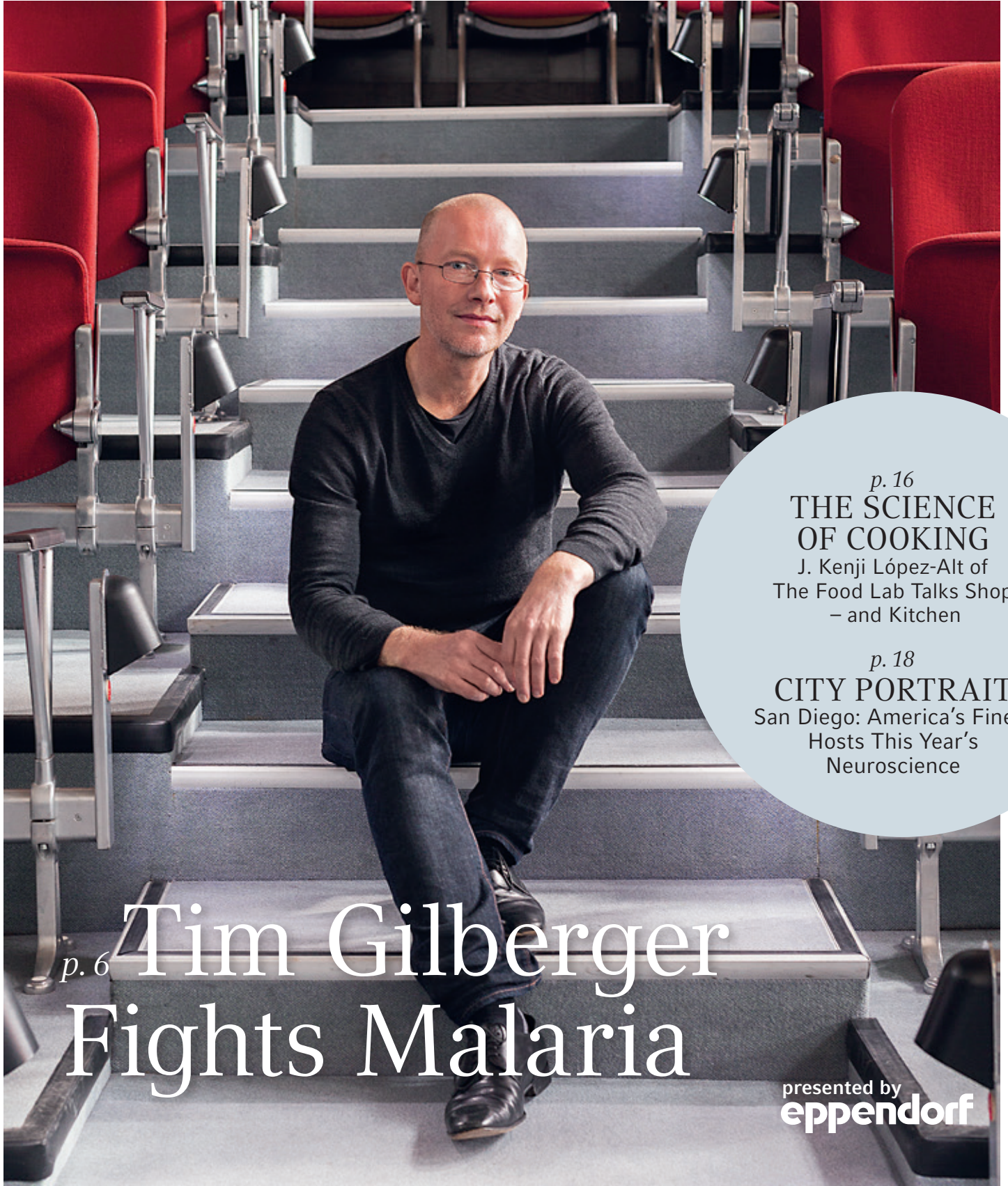


# Off the BENCH

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The Eppendorf – LifeScienceStyle Magazine



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OF COOKING**

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The Food Lab Talks Shop  
– and Kitchen

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Hosts This Year's  
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Fights Malaria**

presented by  
**eppendorf**

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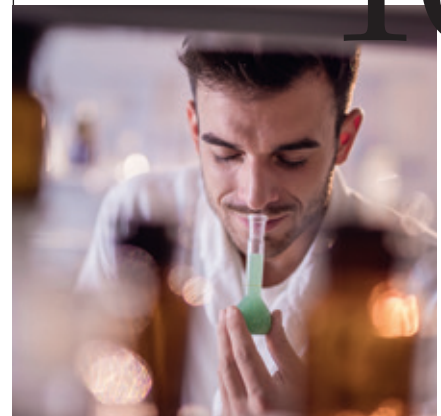
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*Inspiring Science*

## The Power of Fragrance

The act of smelling encompasses more than the simple scent



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## Relax and Enjoy

San Diego, California’s birthplace, offers its visitors the perfect climate, amazing beaches – and Neuroscience 2016

# Editorial



## MASTHEAD

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**Editorial team:** Julie Brahms, Florian Defren,  
Dr. Oliver Franz, Susanne Janenz, Dr. Kay Körner,  
Irina Schner, Svenja Sterneberg, Frank Thormählen

**Proofreading:** Editorial team, Janine Mahrt

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**Management:** Ulrike Teschke,  
Jan Hawerkamp

**Project lead:** Katrin Voges

**Editor:** Sigrid Neudecker

**Layout:** Claudia Schiersch,  
Sarah Brockmann

**Graphic editor:** Beatrice Jansen

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## Dear readers,

Until now you have most likely known Eppendorf as a premium manufacturer of laboratory products and provider of comprehensive services. With this first edition of the Eppendorf LifeScienceStyle magazine "Off the Bench", which you are now holding in your hands, we want to offer you something new. Different sections pick up interesting stories from life in science. They are intended to inform, provide tips and, last but not least, contribute to your entertainment. With well-researched content and interviews straight from life; without any limitations on topics, but always relevant: LifeScienceStyle.

Those of you who will visit Neuroscience 2016 in November will have the opportunity to catch a glimpse of San Diego, the birthplace of California, in our section "Science in the City". Indulge in a little relaxation following a long day at the conference and read here about good places to continue the discussion with colleagues in a casual setting, or how to get to one of the beaches of "Beach Boys" fame.

As the first guest of our section "Research Careers", we had the good fortune to interview Dr. Tim Gilberger, who is committed to fighting the malaria parasite plasmodium. Join us in visiting his office at the Bernhard Nocht Institute for Tropical Medicine and learn more about his fascinating work.

Ample proof that laboratories are not just sterile places for work is presented in the interview with the founder of The Food Lab, J. Kenji López-Alt, as well as in our series of pictures on molecular cooking in the section "Food for Thought". A dash of calcium lactate, a shot of soy lecithin – and you have magically created a surprising dish – without any magic at all.

In the closing section "Eppendorf News" we will provide you with tips for your work in the laboratory and reveal news from the wide world of Eppendorf.

I wish you lots of fun with this first edition, and I hope that we are able to add a little more color and joy to your day.

Sincerely,  
Dr. Ralf Hermann  
Chief Marketing Officer Eppendorf

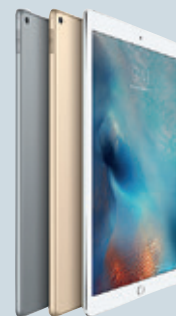


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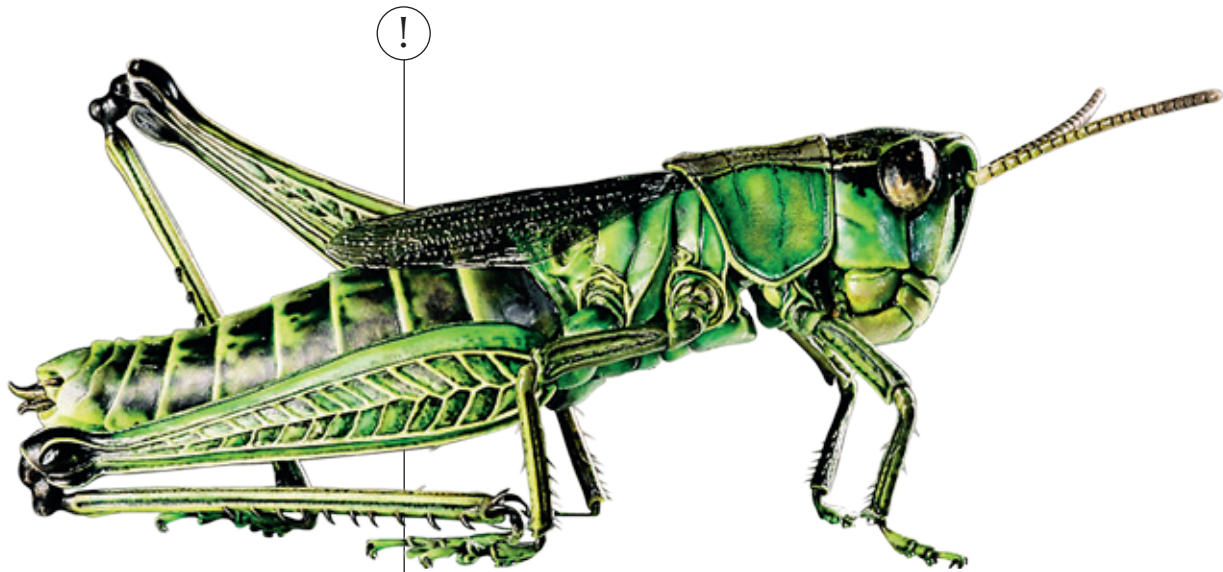
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We look forward to your feedback, which will tell us whether we have indeed achieved our goal with this issue. We invite you to submit your suggestions for improvement to [magazine@eppendorf.com](mailto:magazine@eppendorf.com). We will raffle off an iPad® among all entries.

# Creatures Big and Small



## Big Bugs

This common grasshopper (*Chorthippus parallelus*) is no less than 15 ½ inches (40 cm) high, 30 inches (80 cm) long and 20 inches (55 cm) wide. It is not a frightening mutation, but rather the work of Julia Stoess, a designer and trained costume designer from Hamburg who, after 15 years in the TV and film industry, rekindled her passion for spiders and insects. “The amazing lifestyles and survival strategies of insects have always fascinated me, as well as the sometimes bizarre shapes and colors”, says Stoess. She produces larger-than-life models, mainly for exhibits and natural history museums.

[www.insektenmodelle.de](http://www.insektenmodelle.de)

## WORLD SCIENCE DAY

Each year, November 10 marks the celebration of “World Science Day for Peace and Development”. Originated in 2001 by UNESCO®, it has since served as a reminder of the significant role that science plays in worldwide peace and global development. Its goal is to raise public awareness of the topic. This day is also dedicated to those researchers who tackle the answers to global challenges, such as climate change, migration and the fight against poverty. UNESCO® advises scientists to bet on a global strategy against these problems. This also concerns the inclusion of emerging markets and developing countries. UNESCO® further emphasizes the significance of an international science treaty, in an effort to efficiently solve future problems .

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**OPRAH & HELA** One of the most famous women in America will soon appear on screen in a film about one of the most famous women in science. TV mogul Oprah Winfrey stars in the film adaptation of Rebecca Skloot’s bestseller, “The Immortal Life of Henrietta Lacks”. Winfrey plays Deborah Lacks, the daughter of the African-American woman whose cancerous cells were harvested without authorization and used to create the first immortal human cell line, known as HeLa. Six years ago, Winfrey already produced a feature-length adaptation of Skloot’s book for HBO® Films, which has now signed her to star in the movie.



**Wonders of the drifting world:** Christian Sardet's book shows the beauty and biodiversity of plankton



35,000  
samples collected

### Floating Diversity

They measure between 0.02 micrometers and up to two millimeters (0.07 inches), but still represent nine-tenths of the living mass in the oceans: plankton. They generate half of earth's oxygen, draw carbon from the atmosphere to the deep sea and play a big part in the global nitrogen cycle. In 2009, the Tara Oceans project set out to explore these tiniest of creatures that are so crucial to life on earth. Over four years, scientists on board the schooner Tara sailed the seven seas to collect samples, measure temperatures and analyze living environments. The 11.5 Terabytes of data they amassed will, in the years to come, help us understand the complexity of plankton and the circumstances under which they thrive or die. Apart from their sometimes astonishing capabilities, even non-biologists will be fascinated by their unfathomable diversity, a fraction of which can be admired in "Plankton" by Christian Sardet, cofounder of the Tara Oceans project.

[www.oceans.taraexpeditions.org/en/](http://www.oceans.taraexpeditions.org/en/) <





“You need to approach cell biology with the enthusiasm of an artist.”

“

“

# In Love with a Parasite



**RESEARCH CAREERS**  
Cell biologist Tim Gilberger's research focus measures only a few micrometers, yet these micrometers set the stage for a drama taken straight from Greek mythology: war, ambush, deception, death. And occasionally: sex.

**T**im Gilberger's enthusiasm for his research topic is contagious. As soon as he starts a short film on his laptop, his fascination with plasmodium falciparum, the parasite that causes malaria, is palpable. "Here!" he exclaims and points to a red blood cell that is about to be conquered by the parasite. "The little rascal gets into the cell! Within seconds!" On the monitor, the smaller circle disappears into the larger one, which promptly collapses. Defeat! But then, all of a sudden, it is again round and full. Did the cell defeat the parasite? On the contrary: the enemy takes on the disguise of the victim. "If the erythrocyte continued to look sick", explains Gilberger, "the spleen would make short work of it. Smart! The ideal stealth bomber!"

According to WHO estimates, this stealth bomber kills no fewer than 400,000 people a year. Next

to HIV and tuberculosis, malaria is one of the most deadly infectious diseases. Finding a vaccine is considered one of the holy grails of medicine. This fight against the tropical disease is hindered by its highly complex life cycle – a phenomenon that Gilberger describes as "totally fascinating: a unicellular organism capable of surviving in humans just fine even though we are equipped with one of the most sophisticated immune systems of all. An organism that can then jump to a completely different system: a mosquito! One that can have sex only there, and which then uses the mosquito to infect the next human. I must say: Chapeau!"

Gilberger's admiration for a mass murderer may appear to be in bad taste, but it is this admiration which has driven the researcher for the past 20 years to find ways to defeat this pathogen. The 47-year-old researcher came upon his area of research by chance:

during his studies he attended a biochemistry lecture at the Bernhard Nocht Institute for Tropical Medicine in Hamburg (BNITM) and was so excited by the professor that he applied for a project under his guidance.

"The combination of biology and chemistry interested me the most because it allows a look at life at the molecular level: the small, which is the basis of the whole. After all, we ourselves are nothing but a well-organized heap of molecules." A heap whose genetic fingerprint, according to Gilberger, was profoundly shaped by exactly these malaria-causing parasites. "They were always there. The malaria parasite co-evolved with four-limbed vertebrates."

It is yet another factor complicating his work. Gilberger starts another video on his computer. It shows the parasite attempting to enter a red blood cell, without success. "We have added a small peptide, mimicking a specific antibody against a surface structure, to our cell culture; it specifically recognizes and binds to a single surface molecule on the parasite", explains Gilberger. "In the field the parasite escapes this by establishing multiple variants of this surface structure. Because of this field-polymorphism these specific antibodies do not recognize their target and parasites are free to enter the cell."



**Plasmodium in the lab:** Every student cultivates their own parasites

# Malaria kills more than 400,000 people per year

**In the lab:**  
Tim Gilberger is too busy to work there himself. But he plans to do so – in a few years.

Just this invasion process became the focus of Gilberger's team at BNITM. "We believe that more than 400 proteins form its molecular basis. Once we have identified the strategically important ones we will be able to focus on ways to block them. If we accomplish that, we will have conquered another step in malaria research."

Sounds easy – but it is not. This plasmodium comes in so many variants and is so adaptable to boot, that the number of possible solutions is close to infinite; a vision that would discourage most puzzle enthusiasts. Not so this native of Hamburg who speaks of failure with contagious enthusiasm. "We must incorporate failure into our research", he says. "You need to approach cell biology with the enthusiasm of an artist: 95 percent of experiments will not work as expected. But that's life, isn't it?"

For the past two years, the Professor has had the opportunity to prepare students at the University of Hamburg for the fact that "the path to good research results is long and paved with obstacles." What does he prefer: teaching or research? Gilberger deliberates. "Teaching is a lot of fun", he says. "Unlike in research, feedback from



**Food for a parasite:**  
Plasmodium has to be fed regularly – with human blood.





students is immediate, and one is still able to inspire them. They will find out soon enough on their own that things are not as easy as they seem." He thinks again. "On the other hand, basic research is my focus. You get your recognition by different means." A friendly pat on the back from a colleague at a research conference is good enough for him.

False modesty from someone who tries to rid the world of one of the deadliest diseases of mankind? "I am not after glory", Gilberger shakes his head. "I consider myself lucky because I am allowed to do what I love. The ability to conduct research is a privilege. The day that I stop enjoying this will be my last day at work."

That day is not likely to arrive any time soon, as Gilberger, in addition to his work at BNITM and the university, will be part of a new research institute, the "Center for Structural System Biology (CSSB)" in the summer of 2017. This newly founded center on the DESY® campus (Deutsches Elektronen-Synchrotron; German Electron Synchrotron) will host nine institutions in addition to BNITM. "It will provide us with access to a unique combination of technical platforms", says Tim Gilberger, "including a high-resolution microscopic process that can solve the structures and the dynamics of proteins and protein complexes."

Does he dream at night of future research successes? The professor points towards a map on the wall next to him, depicting a blueprint of the building currently under construction. "At this time I am more concerned with the locations of the incubation rooms and microscopes", he says and, for the first time, he sounds a bit discouraged. "That's how it is if you want to have a say in the design. This is only possible in administration. And I am not really someone who will say: 5 hours of committee meetings, yay!"

This professorship called him back from Canada, where he spent four years at McMaster University in Hamilton – and where he had intended to stay. "This step back to Germany was difficult because I had to bid farewell to a part of my life's dream", he admits. "But I know how long it would have taken me to get a professorship with such generous funding within the Canadian system. If it hadn't been for Hamburg and the BNI and the CSSB, I would not have come back. It was a kind of jackpot."

Tim Gilberger relaxes from the red tape that comes with this jackpot by running. If possible, every night after both his children have gone to bed. He has "approximately" 15 marathon races under his belt. "Before, I was still standing in the lab. This was physical exercise." Nowadays, however, his colleagues hesitate to admit him to the lab. They find that their busy boss is not quite focused enough. That said, he used to check in on the weekends to see if "something grew" in his cell cultures. "My friends can attest to that", says Gilberger. "They always had to come along before we went to the bar." Now, with three jobs, he is finally lacking the time. "But in a few years' time I can imagine a sabbatical to give me the opportunity to spend a few months in the lab. Just so that I can prove to myself that it's not quite as bad yet." ■

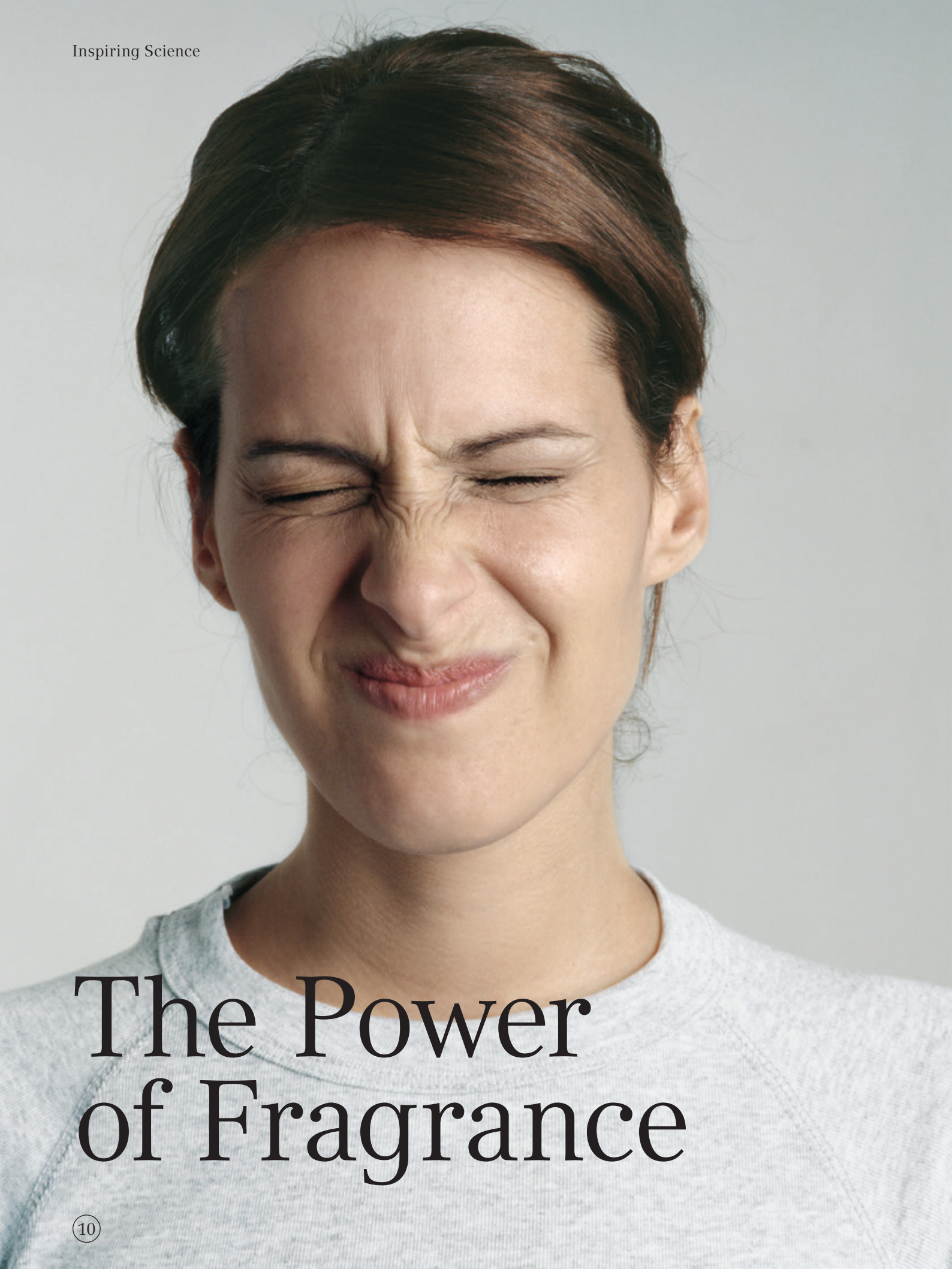
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*“The malaria parasite co-evolved with four-limbed vertebrates.”*



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# The Power of Fragrance

Inhaling, smelling, sniffing – the human nose is capable of detecting the most diverse aromas. However, the act of smelling encompasses more than the simple scent. If something bothers us, “it stinks”. How are our actions influenced by what is in the air?

**O**n average, an adult will inhale and exhale 26,000 times per day. Despite the millions of scent molecules entering our nose, humans are capable of detecting and distinguishing only about 10,000 of the 400,000 scents that exist on earth. At the same time, these must be highly concentrated. This makes us humans rather poor smellers - microsmates. By comparison, the mucus membrane of a cat's nose covers five times as much surface as that of a human, and while dogs possess approximately 240 million olfactory cells, humans must make do with only about 10 million.

All these insights do not change the fact that science knows considerably more about the other four senses than it does about the olfactory sense. The visual sense depends on the wavelength of the light, and the auditory sense detects frequencies and amplitude.

The factors that make a difference during the act of smelling are not easily discerned. This is why we refer to the other senses, when we describe a scent. A fragrance is therefore heavy or floral, or it is circumscribed by using comparisons, such as “smells of freshly mown grass”. Researchers are nevertheless certain: our olfactory sense, and what it perceives, exerts a vast influence on our daily lives – consciously and unconsciously.

For example, certain emotions may be elicited if they are connected to a scent – a fact that has been recognized since antiquity. The Greek philosopher Aristotle knew: “Man does not perceive a fragrance without experiencing a sense of either pleasure or displeasure.”

Our sense of comfort also depends on what we smell. Even our mood and our actions can be manipulated, or even directed, by fragrances. Industry in particular has discovered this power of manipulation called scent branding. For the past few years, supermarkets have been enveloped in the aroma of freshly baked bread, and movie theaters smell of popcorn where there is none.

All these manipulations have the same goal: to prompt impulse purchases that visitors may not have considered in the absence of the surrounding smell. Or they are supposed to feel so comfortable that they will always return. An American hotel chain sprays its lobbies with the scent of apple pie so that guests will feel immediately at home.

They are taking advantage of the fact that the olfactory bulb is integrated into the limbic system, the very region of the brain that is responsible for processing emotions. This is why scents will typically elicit an instinctual response and only rarely a rational one.

Olfactory perception is passed directly from the hippocampus to long-term memory storage, without being filtered. For this reason, scents are closely linked to memories. When we inhale certain fragrances, images, emotions and even physical reactions often appear instinctively. Surrounded by the smell of freshly baked cookies, we think of Christmas. If a person ahead of us on the street wears a perfume that reminds us of someone familiar, that person will appear before our mind's eye.

This also works the other way around. Looking at a photograph from our childhood, at times the very smell that our memory associates with the event will enter our noses – although it is not present at the time.

Every person has their very own olfactory memory triggers. The important difference is whether the salty smell of the ocean or the warm summer rain is linked to positive or negative memories.

Our olfactory sense not only influences our purchasing decisions and our memories. Love, too, goes through the nose. “Whoever controlled the fragrances controlled the hearts of men”, says Jean-Baptiste Grenouille, the perfumer with the distinct ability to discern fragrances in Patrick Süskind's bestseller “Perfume”.

We are under the impression that when it comes to the choice of a partner, external factors decide whether or not we will find someone attractive. However, it is finally the nose that guides us. Men and women with distinct aromas, in particular, will find each other interesting. The fragrance of the body represents an expression of our immune system. This is the reason our olfactory system prefers those potential partners whose bodily scent – and therefore whose immune system – is as different from our own as possible. Such a union will produce offspring who are equipped with an ideal and especially robust combination of both immune systems – an evolutionary mission that should not be underestimated.

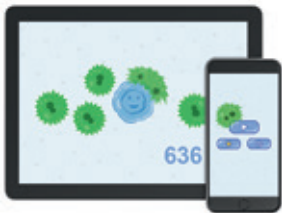
There are, however, factors that may change olfactory preferences: the contraceptive pill, but also age and past experiences influence our reactions to scents. Even if the aroma may be the initial trigger – once we get to know a person more closely, all the senses will have their say.

# Lab Lifestyle

## Inside Nobel Labs

Once a year up to 40 Nobel Laureates convene in the German town of Lindau on the shores of Lake Constance to meet the next generation of leading scientists, undergraduates, PhD students and post-doctoral researchers from all over the world. The host institute's website now offers a peek into the laboratories of 13 Nobel Laureates. Thanks to high-definition 360° shots, the visitor can see every centrifuge, every HPLC column and even personal notes. For example, the fridge in Brian Kobilka's protein purification lab has a note "Eat cinnamon toast." Done. "Win 2nd Nobel prize." Not quite yet. He received his first one in 2012, together with Robert Lefkowitz, for studies of G-protein coupled receptors.

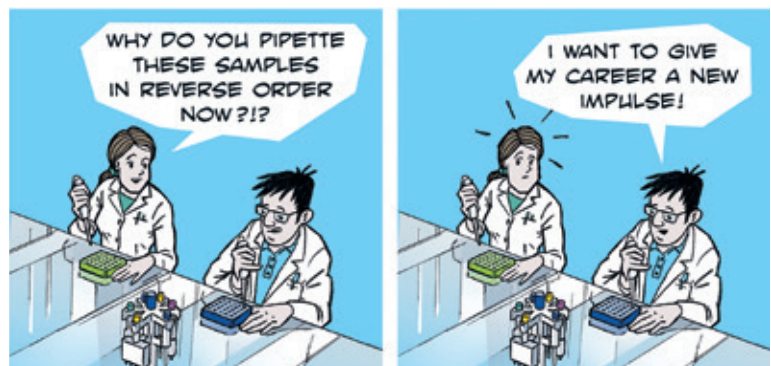
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### SQUEEZE

Thanks to the Eppendorf app, waiting times between test runs are now more fun! In our new game Squeeze, a poor cell must be defended against evil assailants. The international high score list is waiting!

## At the Bench



[www.eppendorf.com/pipetting](http://www.eppendorf.com/pipetting)

## Science sick – of emotional lows and summit days of science

Rien ne va plus – no more bets. For the third time, I am listening to “Caught in a bad project” on YouTube®. Coffee has stopped working long ago. Consider the blood, sweat and tears scientists have poured into the extraction of some random substance from some random plant 30 years ago, with massive expenditures of both solvents and time. Today, I’ll buy it at Extrasynthese.

Or the arduous process of concentrating endless samples just to find some analyte amidst roaring background noise? Analytes that now jump out at me when I inject my diluted samples directly. But now my own peaks have been reduced to background noise.

Perhaps we should all take a 30-year hiatus, until columns and mass spectrometers have reached perfection? Until my signals, too, will emerge from the background noise?

What was it exactly that got me excited about science? I wanted to break new ground! Instead it appears I should have taken up sailing to look for lost islands. On the other hand: where else are new discoveries still in the making? How many unclimbed peaks still await the scientist? I am not even talking about the foreboding mountain ranges of cancer and Alzheimer’s that can never be crossed in one go.

A solid base camp is a must! And of course the first attempt is not always successful. Luckily, the dangers in the lab are more manageable, even if everyone likes to share tales of narrow escapes! But these unforgettable moments when the peak suddenly appears, when you see a signal or a color change and you know “Eureka!” or, as more recently coined by Kary Mullis: “Holy shit!” That moment is worth every one of the 847 recorded measurements and every one of the 4320 wells pipetted. And you feel it once again, that fire inside you. What are you waiting for? Let’s go and write history! Off to new summits!

**Stefan Spreng** was born in 1988. Following his studies in food chemistry, he is now about to submit his thesis on antioxidants in beer to the chair of Food Chemistry and Molecular Sensory Science at the Technical University of Munich. Until his next performance, you can enjoy his science slam on YouTube.



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**NO MORE WHITE**

Two Japanese artists worked together to design this unusual lab coat. The idea for the multicolored digital print comes from glitch artist and programmer Ucnv. The coat was developed in collaboration with Nukeme, who designed the silhouette. The coat, which costs USD 283.52, is made to order and can be found at

[www.etsy.com](http://www.etsy.com)

**ONLY AT SECOND GLANCE**

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FOOD FOR THOUGHT

# A Treat from the Lab

1

## EMULSIFICATION

When liquids are beaten to create foam, their surface area will increase. The result is a more intense taste sensation. However, the bubbles burst easily. Emulsification stabilizes them. In this case, strawberry juice was mixed with soy lecithin and beaten using a milk frother.

2



## REVERSE SPHERIFICATION

When a solution containing calcium lactate is submerged into a sodium alginate bath, calcium ions react with alginate molecules so that a thin gel membrane encapsulates the solution. This way, a Cosmopolitan can be served on a spoon.



3

#### GELIFICATION

In principle, every liquid can be processed into pasta. To this end, it will be brought to a boil with agar-agar, injected into thin silicon tubing and subsequently placed in ice water for cooling. The noodles are then squeezed from the tubing. This is one way to create a Caprese salad with basil pasta.



4

#### GELIFICATION

To create this caviar, balsamic vinegar was brought to a boil with agar-agar and then added drop-by-drop to ice-cold olive oil using a pipette. Since the agar-agar solution is water-soluble, it is better to use an oil until the gelification process is completed. As a final step, the beads are rinsed in a water bath.

**C**ucumber snow and frozen cheese-air, nitro caipirinha with concentrate of tarragon, sea cucumbers with fat from ham and hot gelatin from yogurt whey – some creations originating in the molecular kitchen read as mysteriously as a formula from a book of magic potions. Preparation, as well as presentation, is often reminiscent of the methods of medieval alchemists.

For example, to create spheroid tea ravioli, tea must steep in a bowl for 24 hours, then be dropped in portions with a gelification agent originating from algae and frozen lemon cubes into a calcium chloride solution for half a minute, before being served on a spoon as a transparent brown sphere with a core of milky-white lemon. The secret is the reaction between the alginate and the chloride solution, which encapsulates the remaining liquid by forming a gelified layer around it. The result is a sphere that bursts inside the mouth when squeezed by the tongue.

The template for this school of cooking has its origins in the famous "el Bulli" volumes by the Catalan gourmet chef Ferran Adrià. Over a period of two decades, this "Picasso of chefs", as he is called by his fans, revolutionized the culinary sector with his molecular cuisine.

The ideas of Adrià have made their way around the globe, because they are actually quite simple: splitting foods into their components and aromas and then reassembling these in a different way. The purpose of the molecular kitchen is to understand what actually happens to the individual ingredients during the different cooking processes, and how these events influence the pleasure perceived.

This is how scientific discoveries can change the traditional understanding of cooking. And the laboratory offers a brand-new experience of pleasure.



5

#### SPHERIFICATION

Basic spherification consists of immersing a liquid-containing sodium alginate in a high-calcium bath. Calcium ions then migrate from the sphere's exterior to its interior. Here this technique is used to create pearls made of cranberry juice to accompany a Cosmopolitan.

!

## Prize Drawing!



We will raffle off four cooking sets by Molecule-R®, two sets of Cuisine R-Evolution and two sets of Molecule R-Evolution. To win, send your favorite recipe (see page 17) to [magazine@ependorf.com](mailto:magazine@ependorf.com), subject "Molecular Kit".

# The Kitchen-Scientist



J. Kenji López-Alt is the managing culinary director of the website Serious Eats. His first book “The Food Lab: Better Home Cooking Through Science” weighs in at six pounds and corrects everything we thought we knew.

**One of the first “recipes” in your book is how to cook hard-boiled eggs. And you admit that it took you a few dozen tries to get it right. Could it be that you’re just a tiny little bit compulsive?**

I’m more than a tiny bit compulsive! But it’s all because in the end, I want to make things easier for myself. Do all the testing once, then I never have to worry about my hard boiled eggs coming out poorly in the future.

**Does your kitchen still look like a kitchen or more like a lab?**

Somewhere in between, but more towards the kitchen side. I do have lots of equipment and tools for measuring, but at the end of the day, cooking is about feeding people and bringing friends and family together; so unless I’m specifically working on a recipe or conducting an experiment, I cook very much like most other cooks: I am only precise when I need to be and rely on my senses much more than on my tools.

**How do you explain that there are still so many myths or incorrect beliefs when it comes to cooking?**

Cooking is something that most people will have to do in their lifetime, and most of the time the knowledge is passed down institutionally, whether it’s from parent to child or from chef to cook. It’s simply not something that too many people think critically about and generally the attitude is, “if it works, then why change it?” I think this is a fine attitude to take, and if you are happy with the results of your cooking, there is no reason to change them.

The reason we see so much more questioning these days is that many people now grew up without that institutional knowledge. I come at cooking from an angle where I have no preconceptions or attachments, which in many ways, frees me to look at techniques and recipes from a more scientific perspective and come to my own conclusions.

**How did you find out that scrambled eggs get fluffier when you salt them before cooking?**

I tried it! It’s very simple: Salt your eggs, whisk them, and let them sit for 15 minutes, then cook those eggs side-by-side with eggs you salt immediately before cooking and you’ll find that the 15-minute salted eggs will ooze less moisture and come out fluffier than the others.

**So cooking is just physics and chemistry?**

No, cooking is not just physics and chemistry. Cooking is tradition and culture and history and, in some cases, even art. Understanding the science behind it can make you a master of your tools, but it doesn’t replace or contradict the other elements of cooking. A great painter needs to understand how to properly mix colors or achieve certain textures. It’s the same with cooking. Understanding the technique allows you to better express yourself.

**What is the most overrated kitchen utensil?**

Slow-cookers. I call them flavor-robbers. In every single blind taste test I’ve ever done of food cooked side by side in a slow-cooker vs. a heavy pot placed in the oven, the ones in the oven come out tasting better.

**What is the most underrated one?**

A mortar and pestle. Inexpensive, long-lasting, and easy to use, it pulls more flavor out of spices and aromatics than a food processor or blender can, and is much easier to clean.

**How often does your wife say “That’s enough”?**

Once we’ve been eating the same dish for a week, she usually tells me to cut it out. Unless it’s fried chicken. She loves fried chicken.

**Is there something even you prefer store-bought?**

Soft hamburger buns are something that is better store-bought. If I’m making a gourmet burger, I’ll bake my own buns, but for a thin, fast, diner-style hamburger, you need the softness that only store-bought burger buns can get you.

**Do you still get invited to dinner – at all?**

Ha, absolutely. I’m a good dinner guest and always happy to be invited. I love seeing what other people create in their kitchens!



**THE FOOD LAB**  
960 pages, W. W.  
Norton & Company,  
September 2015.  
More of J. Kenji López-  
Alt’s work can be  
found here:

[www.serious-eats.com](http://www.serious-eats.com)



# SciencePotluck

## Bring your own Recipe



### INGREDIENTS

#### For the sponge cake batter:

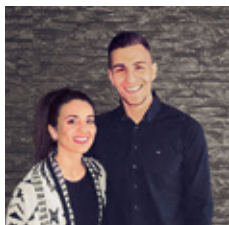
5 eggs  
5 Tbsp sugar  
5 Tbsp flour  
5 Tbsp cocoa  
1 sachet baking powder (16 g)  
1 sachet vanilla sugar (8 g)

#### For the ganache (cream):

200 ml (¾ cup) fresh heavy cream  
200 g (7 ounces) chocolate

#### For the filling:

500 ml (2 cups) milk  
125 g (½ cup) powdered sugar  
1 dash salt  
1 package pudding mix (40 g)  
250 g (1 cup) butter  
500 g (1 pound) strawberries, sliced  
2 bananas, sliced



**Kutluhan Bozkurt, 23,** has been an apprentice with Eppendorf Distribution Germany GmbH at the Köln/Wesseling site since August 2015. This cake is his creation, baked by his wife Duygu Bozkurt.

**1** For the ganache, break the chocolate into small pieces in a bowl. Bring heavy cream to a boil in a saucepan, add to the chocolate, and stir in to a creamy mousse. Let cool overnight.

**2** For the sponge mixture, separate the eggs and beat the egg whites until stiff. Stir the yolks with sugar and vanilla sugar until foamy. Fold in the flour, cocoa and baking powder, and finally the beaten egg whites. Pour the batter into a baking pan lined with parchment paper and bake for 25-30 minutes at 350 degrees Fahrenheit (180 °C) or until a toothpick comes out clean.

**3** For the filling, prepare the pudding according to package instructions, let cool to room temperature and only then fold in the butter, spoonful by spoonful. Split the sponge cake base into 3 separate layers. Cover the lowest layer with half of the filling and distribute the strawberries on the filling. Add the second sponge layer and cover with the remainder of the filling and the finely sliced bananas. Add the top sponge layer.

#### What's your favorite recipe?

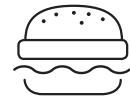
We want to hear from our readers! Send us your favorite recipe, along with a photograph, and join the raffle; see page 15!

[magazine@eppendorf.com](mailto:magazine@eppendorf.com)

### NUTRITION NEWS

#### TOO MANY PHTHALATES IN FAST FOOD

Researchers at George Washington University in Washington, D.C., have found another reason to avoid fast food. They obtained data on 8,877 participants' diets in the past 24 hours through detailed questionnaires, and quantified the phthalates in their bodies through urine testing. People who had eaten fast food had phthalate levels up to 40 per cent higher than those who had not. Phthalates are used in the manufacturing of food-packaging materials and have been linked to a number of serious health problems, including damaging the reproductive system.



#### LOW-FIBER DIET STARVES GUT MICROBES

Up until now, only the tip of the iceberg was known: what the intestinal flora does for the human body nowadays fills entire professional journals. Recently, Justin Sonnenburg, a microbiologist at Stanford University, researched another angle of how diet impacts the microbiome. He fed mice a high-fiber diet, before switching half of them to low-fiber food for seven weeks. In the low-fiber group, 60 percent of the local microbe species saw their numbers fall dramatically, and some species remained at low levels even after the mice returned to high-fiber meals. Sonnenburg's conclusion: fiber also feeds the trillions of microbes in the human gut. This means that a fiber-rich diet can nourish a wide variety of gut microbes, leading to better resistance against pathogenic organisms, such as salmonella.

# Relax and Enjoy

## SCIENCE IN THE CITY

San Diego features a pleasant climate year-round, along with amazing beaches, international cuisine and breathtaking nature. What serendipity that this year's conference on Neuroscience takes place once again in California's birthplace.

**D**el Mar, Trestles, Swami's, San Onofre, La Jolla – of the sixteen beaches heralded by the Beach Boys in their classic "Surfin' USA", no fewer than five lie before the gates of San Diego, thanks to the Pacific Ocean, which offers more than simply being responsible for the exceptional waves. The ocean is also the reason why California's second largest city was crowned "America's finest", with consistently mild temperatures that rarely rise above 80 degrees in the summer and hardly ever fall below 65 degrees in the winter.

Could this be why the residents of San Diego are so relaxed? They live in a metropolis that now features what is likely the most exciting mix of old and new, nature and science, as well as influences from around the world. Initially inhabited by the Kumeyaay, the Spanish landed here in 1542. San Diego became Mexican in 1821, but shortly thereafter, in 1850, following the Mexican War, it became a part of the United States of America.

The oldest part of the town is located in today's Old Town, where visitors are transplanted back to the era of Mexican independence from Spain. Old Town's many remaining and restored wooden or dirt

buildings are best explored on foot. Directly behind the Convention Center, hosting Neuroscience 2016, you will find the Gaslamp Quarter. An investor towards the end of the 19th century had intended for the Gaslamp Quarter to replace the Old Town as the town center. The plan succeeded; however, it came with unintended side-effects. The new, flourishing neighborhood soon became home to saloons, brothels, such as the notorious one owned by Ida Bailey, as well as gambling halls, which were only closed in 1912 following a large raid.

Today, it is perfectly legal to celebrate the night in one of the 100 restaurants or 40 night clubs of the Gaslamp Quarter. And if you wish to spend the night next to Bailey's former house of pleasure, you may take a room at the Horton Grand Hotel and travel back in time with one of the guided tours through the Quarter.

In the meantime, San Diego has been writing modern history. Inspired by the University of California, as well as the affiliated UCSD Medical Center, the city has transformed itself into one of the three most influential biotechnology centers in the country. Over 400 biotech companies ▶





Laid-back San Diego:  
Beaches and a mild climate  
make it "America's finest"



have settled mostly around La Jolla and in the neighboring Sorrento Valley, and more than 140 research companies serve pharmaceutical and biotech corporate groups in the region. It is therefore not a coincidence that the neuroscience conference will take place here.

The mostly young and well-educated people working for these new companies have turned the city into a creative boom town. One indicator for this phenomenon is the rapidly growing craft beer scene. *The New York Times*® called it “a sunny heaven for suds lovers”. More than 100 small breweries, many of whom have won awards have made San Diego their home. During the World Beer Cup, California Brewers won more awards than those from Germany or Belgium.

Perhaps the beer is another reason why Californians are so relaxed; perhaps the credit goes to the many opportunities for leisure activities in nature right at their doorstep. Thanks to its mild climate and low precipitation, San Diego County is perfect for all kinds of open air activities. Water sports enthusiasts have access to 70 miles of coastline.

For hikers and climbers, the Cuyamaca Mountains are only an hour's drive to the East, and to the North, the Anza-Borrego

“A sunny heaven for suds lovers”

The New York Times

Desert State Park beckons. No fewer than 492 species of birds live in San Diego County, more than in any other region in the U.S. Many rest here during their migration between Alaska and Patagonia, also known as the “Pacific Flyway”.

The diverse habitats around the city offer protection to many endangered animal and plant species. Many of them can be observed behind bars or free in Balboa Park, an area of close to two square miles in the middle of the city, a mere 10-minute drive from the convention center.

Balboa Park is not simply a huge urban green space for the recreation of the people of San Diego. It is also home to 17 museums, 19 gardens, 9 cultural sites, as well as numerous sports facilities, including a tennis court, a bowling lane and paths for hiking and cycling.

Last, but not least, is the San Diego Zoo with its 400 “inhabitants”. Balboa Park also inspired a song; however, the reasons were less flattering. By the 1980s, muggings and murders had increased to a point where Bruce Springsteen felt compelled to write a song. But those days are long gone and the city is considered very safe. Visitors and natives alike can relax and enjoy the sun. ■

## LET'S GO!

### Day trips and leisure activities in San Diego

**1** THE HOTEL CORONADO on the peninsula of the same name will be recognized by movie buffs: It played a major role as the “Seminole Ritz Hotel” in “Some like it hot”.

[www.hoteldel.com](http://www.hoteldel.com)



**2** MORE THAN 26 CAR-FREE MILES await you in Mission Bay, a salt-water lagoon north of the San Diego airport. Cyclists are free to explore the area and cool off at one of the many sandy beaches.

**4** The bar NOBLE EXPERIMENT in the East Village is an insider tip. Reservations are made online. The bar can only be reached by pushing open a wall of false beer barrels in a burger restaurant. Behind the wall, drinks created by the city's best bartenders beckon.

[www.nobleexperimentsd.com](http://www.nobleexperimentsd.com)

**3** Those who prefer to study a little beer science following the conference are invited to visit the WHITE LABS®. Breeding yeasts are developed here and specialty beer has been brewed on site for some time. You will be able to watch the scientists at work through a window while enjoying your beer.

**5** The TIPSY CROW is an innovative place: the prices of certain drinks are determined via the “drink exchange”, which functions not unlike the stock exchange: the higher the demand, the more expensive the drink.

[www.thetipsycrow.com](http://www.thetipsycrow.com)





Marine Street Beach just south of La Jolla Cove: Sometimes a bit too rough for swimmers, but all the more loved by local surfers

① **SAN DIEGO** ②

6



On Sundays, the HILLCREST FARMERS MARKET calls. Products from the roughly 6,000 farmers of San Diego County are at your fingertips. Music and a great atmosphere are free.

7

This year's SAN DIEGO BAY WINE + FOOD FESTIVAL takes place between November 13<sup>th</sup> and 19<sup>th</sup>, perfect timing for Neuroscience 2016. More than 150 wineries, breweries and distilleries will offer tastings.

[www.sandiegowineclassic.com](http://www.sandiegowineclassic.com)

8

The first day of Neuroscience 2016, November 12, also happens to be the day of RAY AT NIGHT in North Park. The event takes place every second Saturday of the month. Boutiques, galleries and small shops in that neighborhood are open late into the night.



EPENDORF AT NEUROSCIENCE 2016  
The 46<sup>th</sup> conference of the Society for Neuroscience takes place from November 12<sup>th</sup> to 16<sup>th</sup> at the San Diego Convention Center; a gathering of close to 30,000 professionals from over 80 countries. Eppendorf will host its own booth where, among other products, the new Centrifuge 5920 R will be on display. Go to page 25 for more info on Neuroscience 2016.

9  
The LA JOLLA PLAYHOUSE is one of the most renowned theaters in the country. 23 of its productions have made it to Broadway and have won a total of 35 of the sought-after Tony awards.

[www.lajollaplayhouse.com](http://www.lajollaplayhouse.com)

Help!

# The Pillars of Excellent Service

## Eppendorf support for premium performance

The desired delivery has occurred and the new instrument is safely in the lab. But this is not the end of it for Eppendorf by any means. Experts are at your side with advice and support – for the entire life cycle of the instrument.

The four-part service offer epServices encompasses everything from technical support to training sessions and certification services; anything and everything users could require for their different applications and work performed with instrumentation from Eppendorf.



### Application Support

Following professional installation, competent handling of the product is essential for getting optimal experimental results, and tapping the instrument's full potential. Highly skilled and extensively trained, the Eppendorf application specialists will ensure that clients are fully confident when using Eppendorf's innovative products. Look also for application Notes, User Guides, FAQs, and videos at [www.eppendorf.com](http://www.eppendorf.com) under "Knowledge Base and Applications".



### Technical Support

To ensure the most productive longevity and highest uptime for all instruments, Eppendorf can provide complete and thorough technical support from pre-site inspection through installation, maintenance, and certification to repair services.

If there is a problem, clients can access a network of highly skilled service professionals with just one phone call or service request through the Eppendorf website. Eppendorf's skilled service staff ensures timely and accurate resolutions are provided with professional guidance and care worldwide.



### Seminars and Training

Eppendorf provides seminars and workshops that allow participants the opportunity to gather basic knowledge or develop more advanced skills needed in various fields of research, medicine and industry; an important aspect for clients whose quality management systems undergo frequent audits. As an addition to this training program, the portfolio of webinars is continually updated (see also inset on next page).



### Maintenance Certification

Preventive maintenance is a schedule of planned service measures aimed at the prevention of unexpected downtimes and failures through routine maintenance and early detection of problems. Eppendorf offers service programs to meet every client's individual needs, and to keep all instruments in perfect working order.

Regular calibration and verification services ensure that precision and accuracy of every instrument and pipetting tool are maintained, and that results are consistent and reliable. Performance Plans are available for all products, such as the automated pipetting system epMotion®, centrifuges and pipettes. They support the client by providing instrument maintenance and certification services, and documentation according to local and international standards.

Learn about every aspect of the epServices program at [www.eppendorf.com/epServices](http://www.eppendorf.com/epServices)



#### RECORDED WEBINARS



#### PROTECT YOUR CELLS WITH PROPER PIPETTING - How Liquid Handling Influences Your Cell Culture Work

Speakers: Dr. Jessica Wagener, Field Application Specialist, Cell Handling, Eppendorf AG

#### SOLUTIONS BEYOND WATER – Successfully Pipetting Problematic Liquids

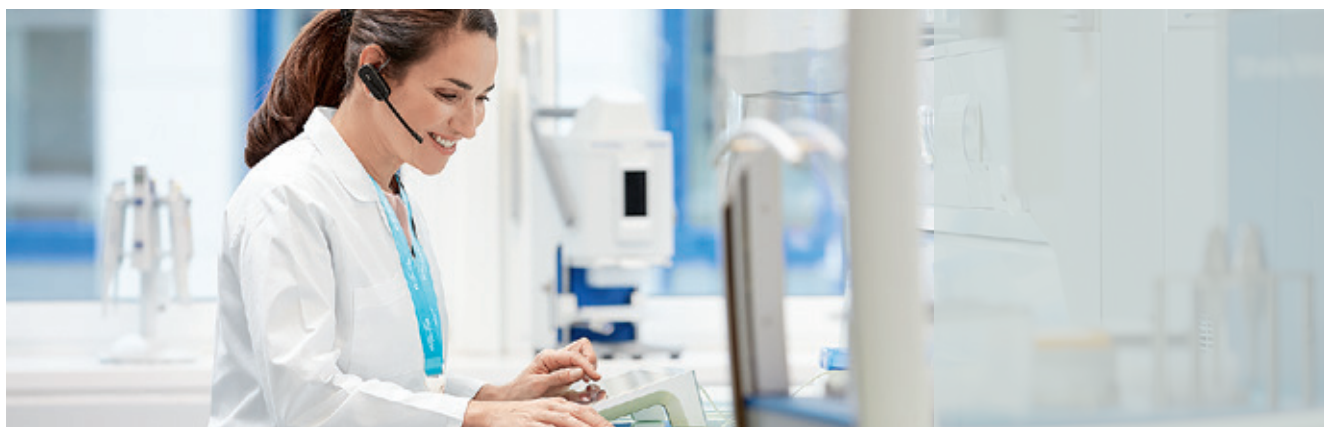
Watch recording now  
Speakers: Dr. Hanaë A. Henke, Field Application Specialist, Liquid Handling, Eppendorf AG

Dr. Rudolf Walczak, Global Product Manager, Cell and Liquid Handling

More information and a list of recorded webinars can be found under „Service & Support“ at [www.eppendorf.com](http://www.eppendorf.com).

# Always an Open Ear

## Questions and feedback from Eppendorf-clients never go unheeded



**C**ommunication is not a one-way street. The dialog with scientists, researchers and laboratory staff is very important to Eppendorf: when an instrument leaves the development department at Eppendorf, it does not necessarily mean that its evolution has come to an end.

How heavy can a centrifuge lid be so that each lab member will still be able to lift it effortlessly? Is the ergonomic design of the pipettes optimized to ensure fatigue-free pipetting? Which cleaning agents are recommended to guarantee contamination-free work while at the same time protecting the instrument from damage? A team at headquarters in Hamburg collects and processes questions and experience received from our clients and shares these with colleagues in the corresponding countries to ensure consistently fast and accurate responses, but also to further incorporate needs that our clients expressed in subsequent products. After all, usefulness to the client is the driving force behind the development of new products.

Our experience gained over many years is used to the benefit of our clients, because it allows us to provide a response to their question in real time. In most cases, the client will receive the reply immediately from our local Eppendorf representative who is able to answer many questions directly based on their expertise or by consulting the support provided by Eppendorf headquarters.

Customer inquiries and questions that cannot be answered immediately are routed to headquarters in Hamburg. This is where a specialized team acts as an interface to the individual departments to ensure that new questions are directed to the right contact. For example, following careful examination, the team will contact the responsible colleagues in Production, Development and Quality Management and, if necessary, the team will order test experiments to be performed in our in-house laboratory.

If certain questions arise frequently, the team will make the necessary information available to clients directly via the Eppendorf website. For example, the certificates for many Eppendorf products, which may get lost easily, are available for downloading. Furthermore, the FAQ section is expanded on a regular basis.

Not least, all this information and expertise contributes to the compilation and regular updating of application guidelines and descriptions. These are also available to our clients on the Eppendorf website. This type of mutual feedback ensures that needs, problems and suggestions for improvement from Eppendorf clients will always reach the right contact, be listened to and processed, and addressed to the satisfaction of the client. This is the only way to guarantee development of client-oriented product solutions that will meet the demands of life science laboratories worldwide.

### DO IT YOURSELF IN THE LAB

*What you can do,  
and how you can do it*

#### Is it possible to upgrade the epMotion® 5075 with an additional thermal module?

Yes, you can integrate up to 3 thermal modules in epMotion® 5075. Please contact your local customer service.

How do you maintain your Eppendorf equipment? What's your favorite recommendation for cleaning, disinfecting or plain old trouble-shooting? Share your tips with your fellow Eppendorf users! Write to us at [magazine@eppendorf.com](mailto:magazine@eppendorf.com)

# New Reality



## Eppendorf App – Augmented Reality

Thanks to the newly developed free app, all Eppendorf information is now available on mobile devices. Users may browse the current catalog or read the latest issues of the “BioNews” journal on the road. Available tools that are currently useful in the lab include a cell counter, an RNA codon, as well as a timer.

The augmented reality feature allows you to view a virtual Eppendorf device in 1:1 scale on a smartphone or tablet. You just need to print the tracker (available in the app menu “Augmented Reality”) and place it where you want to see the device. Then choose the product, aim the smartphone or tablet camera at the tracker and see the centrifuge or Mastercycler in full size.

*Tip:* It is best not to print the tracker on glossy paper because light reflections could confuse the program. The Eppendorf app is available for IOS® and Android®.



*Jump directly to the Augmented Reality area in the app with this QR code.*

## NEW PRODUCT

### Centrifuge 5920 R

The new refrigerated Eppendorf Centrifuge 5920R combines extraordinarily high capacity with enhanced temperature management in a very compact and ergonomic product design. The universal rotor bucket design means laboratory staff can spin both plates and tubes in the same bucket without the need for purchasing separate plate buckets. The Eppendorf Centrifuge 5920R also offers a powerful state-of-the-art refrigeration system with advanced temperature management. Dynamic compressor control technology and a FastTemp pro® function also allow precise and automated pre-cooling based on a pre-programmable time and date. Easy to use, the Centrifuge 5920R features a multilingual menu on a backlit display with 5 program keys enabling rapid access to routine programs, as well as an adjustable ECO shut-off function to save energy and lengthen compressor life. “With laboratories under increasing pressure to increase efficiencies and throughput we understand the challenges that laboratory staff face in their work,” said Peter Schreiner, Global Product Manager Centrifugation at Eppendorf.

To find out more about the Centrifuge 5920R, visit [www.eppendorf.com/centrifugation](http://www.eppendorf.com/centrifugation)







## Neuroscience 2016



Neuroscience 2016 will take place November 12-16 in San Diego, California, USA. At this conference the winner of the Eppendorf & Science Prize for Neurobiology 2016 will be announced. We asked Shigeki Watanabe, last year's winner, what to look forward to at this year's annual meeting.

"I expect the hot topic to be circuit behavior. Another emerging field is the brain's immune system. Gut-brain communication is also a topic to look out for. The basic cell biology talks are what I enjoy the most."

### Which direction do you see neurobiological research taking in the next decade?

"With the advent of optogenetic tools, the trend in neuroscience has shifted quite a bit as you can see from the past winners of the Eppendorf & Science Prize. In the early '00s, we were trying to understand the basic cell biology of neurons or physiological properties of neurons but in recent years more system-level studies (circuit behavior) are being conducted. I think this trend will continue for a while, but eventually it will come back to more cell biological studies. This is so because understanding the pathogenesis of diseases will likely require a cellular and molecular level of analysis just as it has been for understanding cancer or viral infection or other pathologies."

For more information on the Eppendorf & Science Prize for Neurobiology, go to [www.eppendorf.com/prize](http://www.eppendorf.com/prize). The next winner will be announced at Neuroscience 2016.

### EPPENDORF IN SAN DIEGO



**EPPENDORF IN SAN DIEGO** Visit the Eppendorf booth at Neuroscience 2016 and check out the new Eppendorf Centrifuge 5920 R. You can find us in booth No. 901.

Vancheeswaran Sankaranarayanan, Managing Director, Eppendorf India (left) and Thomas Bachmann, CEO of the Eppendorf Group, at the inauguration of the new building



## New Office in India

Eppendorf India opened its new site in Ambattur, a neighborhood of Chennai. Here a team of highly qualified scientists and engineers will contribute to the development of skills and proficiency in the scientific community of India, as well as lead training programs at the highest level. In the Customer Experience & Training Center, new and returning customers will be introduced to innovative technologies. On the occasion of the opening, Vancheeswaran Sankaranarayanan, Managing Director and CEO, Eppendorf India, said: "During the ten years that Eppendorf has been represented in India, we have significantly supported the biosciences as well as the biotechnology sector. In light of consistently increasing demand for our premium products and services in India, we want to use our new Customer Experience & Training Center to considerably expand our customer-oriented initiatives."

The new offices are located at: Eppendorf India Limited, 18, 90, 20 (part), South Phase, Ambit Park Road Ambattur, Chennai 600058



The new Eppendorf office in India

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?

## Red Ant Scared Off by Sawfly Caterpillars by Anthony Cooper

The sawfly caterpillars (*pristiphora testacea*) had just hatched and were eating the edge of the birch leaf (*betula pendula*). The red ant (*myrmica rubra*) entered the scene and the caterpillars responded by all springing out at the same time; this caused the ant to flee.

*Anthony Cooper is one of the artists from the 2015 competition*





**ROYAL SOCIETY OF BIOLOGY  
YOUNG PHOTOGRAPHER  
COMPETITION**

Every year, the Royal Society of Biology in England awards young amateur photographers for exceptional nature photographs capturing a specific biological topic.

From the submitted photos, prizes are awarded for the best Amateur Photograph (18 years and older) as well as the best Young Amateur Photograph (under 18). Eppendorf has supported this competition as the

only sponsor from the industry for many years and has the exclusive rights to present the winning photographs at its premises. The finalists and winners of the 2015 competition under the motto "Conflict & Survival" are exhibited there.

Eppendorf will also support the 2016 competition. This year's topic is "From big to small", and for the first time microscopic shots will be admitted to the competition.

Larger Display—  
Easier Working



# Generation E

## Multipipette® E3 & E3x: Dispensing without compromise

The new electronic dispenser is the one pipette missing in your set. It is perfect for special tasks going beyond the limitations of a standard pipette. In addition, the motor drive minimizes operation forces, thus reducing the risk of repetitive strain injuries following the Eppendorf PhysioCare Concept®.

- > Save time by pipetting up to 100 times without a refill
- > Achieve correct results handling non-aqueous liquids without extra effort
- > Work safely as the hermetically sealed piston provides protection from radioactive or toxic liquids



[www.eppendorf.com/multipipette-system](http://www.eppendorf.com/multipipette-system)