

Unilever Research Prizes 2018



Introduction

Complex challenges requiring integrated approaches

Every single day people in our Research and Development centres go to work to develop new products and technologies that are required to feed the world sustainably as well as provide hygiene and personal care. Innovations are key to overcoming the specific challenges we face in making the world a sustainable living place.

Science and technology play a crucial role in meeting the complex challenges we face today. Collaboration is crucial in developing the new technologies that underpin our innovations.

Joining forces will even become more important in the way of working of today where we take collaboration to the next level and actively engage with science and technology eco systems. Together we can tap into strong international knowledge and talent and multiply the impact.

The decision to build a new Food Innovation Centre in Wageningen is a clear example of this. In our view, joining forces is the only way we will be able to successfully meet the challenges ahead.



With the Unilever Research Prizes we acknowledge and nurture our important relationship with the Dutch academic world.

The annual awards ceremony has a long tradition: introduced in 1956, this is the 62nd year Unilever is presenting these accolades.

We have asked the universities in The Netherlands to nominate their best Master students – those who have done excellent work on topics that are relevant to one or more Sustainable Development Goals. All 13 Dutch universities have put forward one of their top Master of Science students.

The Unilever Research Prizes allow us to show our appreciation for excellent work from this year's talented young academics who stand out from the crowd. Unilever wishes to stimulate these promising talents in their future development by granting these prizes.

I am pleased to be able to conclude that the 2018 nominees do not only exhibit outstanding quality. Many of them are already part of larger, multidisciplinary efforts to tackle the global challenges we face. Whether this is about better predicting global warming, cleaning up our oceans or on how industry and universities can best collaborate.

On behalf of Unilever I would like to congratulate all the winners and thank the universities for nominating such outstanding talents.

Lou Lievense
Vice President Global R&D and
Site Leader Unilever R&D Vlaardingen

Delivering impactful, sustainable innovations

On any given day, 2 billion people use Unilever products to look good, feel good and get more out of life – giving us a unique opportunity to build a brighter future.

Great products that give us a unique place in the lives of people all over the world.

When consumers reach for nutritionally balanced foods or indulgent ice creams, affordable soaps that combat disease, luxurious shampoos or everyday household care products, there is a good chance the brand they pick is one of ours.

Whatever the brand, wherever it is bought, we are working to ensure that it plays a part in helping fulfil our purpose as a business – making sustainable living commonplace.

Driving sustainable growth

At Unilever we believe in a brighter future – a world where everyone lives well and within the natural limits of our planet. We are pioneering a new, more sustainable, way of doing business because we recognise that change is essential if we want our planet, our consumers and our business to thrive. The Unilever Sustainable Living Plan (USLP), launched in 2010, outlines how we will achieve our sustainable growth ambition by helping more than a billion people take action to improve their health and wellbeing, halve the environmental footprint of our products and enhance the livelihoods of millions of people in our supply chain.

Consumer research and innovation are key to our progress, and we invest around €1 billion every year in research and development for all products in Unilever.

Proud of our recent innovations



'Love Beauty and Planet, a new vegan brand encouraging people to do daily beauty acts for both themselves and the planet.

OMO new 25% recycled bottles to do your laundry eco active.



Ben & Jerry's non-Dairy Ice Cream.



Hellmann's Salad Dressings with natural ingredients for spectacular tasting salads.



Knorr One Skillet Meal Starters turn organic ancient grains into delicious meals.



Knorr Essentials make natural & allergen free cooking easy in the professional kitchen.

Small molecules; big impact

How molecular knowledge helps build our innovations



Hans-Gerd Janssen

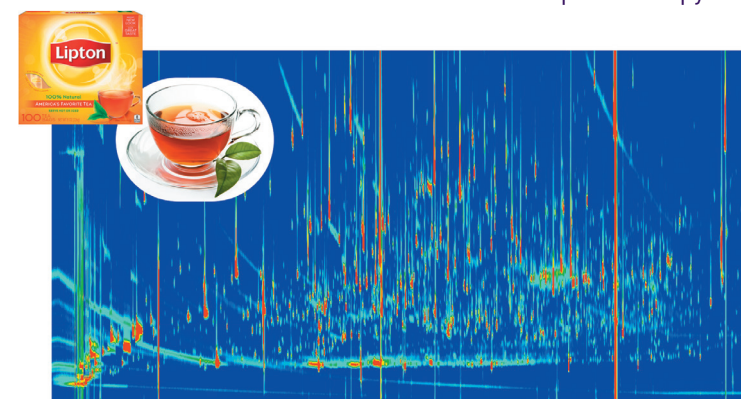
Science Leader Analytical Sciences,
Extra-ordinary Professor,
University of Amsterdam

At Unilever, we put the consumer at the heart and start of everything we do. We ensure our products taste good, do good and are a real force for good. Our product portfolio is constantly being adapted to our consumers' wishes and needs. We need to innovate at a much faster rate than before, which requires new methods of product design. Our ultimate aim is to deliver products that create brand love through clear benefits such as a great taste, good nutritional profile and sustainable production methods.

How does molecular knowledge help?

Understanding how food can offer benefits requires a deep dive into the composition of matter. All matter is made up of molecules. The clothes we wear, the air we breathe and the food we eat all consist of molecules. With the exception of the skeleton, our body is also made up of molecules.

From a chemical perspective, a molecule is the smallest amount of a substance that can exist. In our food products, the molecules are responsible for the great flavour, the preferable nutritional properties, the good mouthfeel and the long shelf-life stability etc.



We are molecules, as is the food we eat



The so-called Maillard reactions result in the formation of molecules with a delicious smell when roasting meat or vegetables on the barbeque. However, not all molecules offer benefits, unfortunately. When we burn meat a class of highly toxic molecules - polyaromatic hydrocarbons - can be present. This means that knowing which molecules are present is of vital importance for developing high quality products with undisputable safety.

How can we analyse food products?

All food ingredients are very complex mixtures that contain numerous molecules. Identification and quantification of these species requires highly advanced analytical techniques such as chromatography and spectroscopy. These techniques

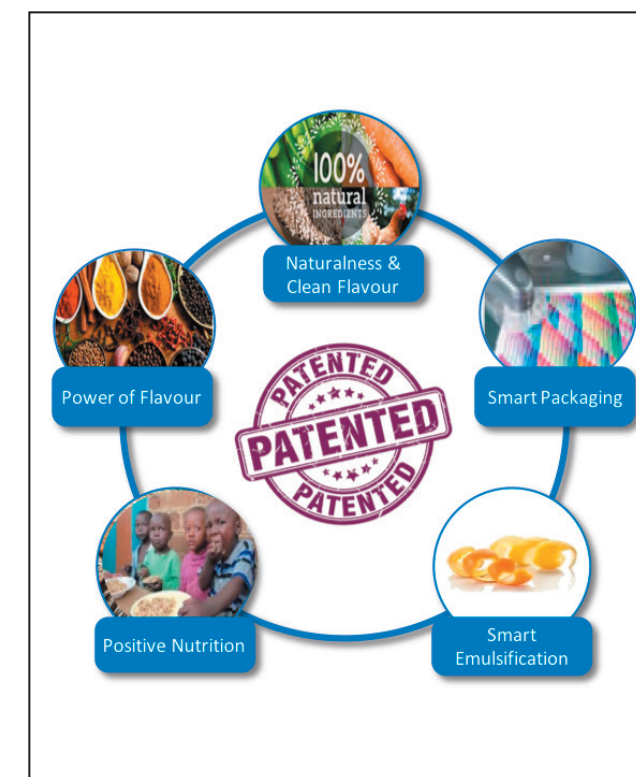
are, for example, used at airports to detect explosives or in hospitals to analyse blood. At Unilever's R&D Vlaardingen site, we have access to a diverse array of these technologies, either in-house or via our external collaborations with expertise centres in the field of analytical chemistry. When applied to a typical food sample, we can detect thousands of compounds at levels as low as a few parts-per-trillion. That is the level you get when putting one sugar cube into the water of 400 Olympic-size swimming pools!

The role of molecular information in smart innovation and intellectual property protection

Classic product development involves tedious optimisation experiments with ingredients, kitchens and tasting sessions. Using automated simulations and modelling, we can now deliver superior products much faster. In fact, by 2020, 100% of our new products will be designed in silico first. This means the molecular compositions of ingredients will be put into models first, rather than ingredients being put into a pan. New technologies need adequate protection by policeable patents, allowing us to respond rapidly in the case of infringement. Molecular compositions can provide evidence beyond discussion, where DNA molecules can be used to detect specific ingredients and compositional fingerprints provide additional evidence.

Molecules in sustainability

In the Unilever Sustainable Living Plan, we have committed to halving



the environmental footprint of the production and use of our products by 2030. Recycling and circular designs are key here. We keep a close eye on the fate of molecules in doing so. When new food packaging materials are developed for better recyclability, we monitor the consequence for the stability of light- and oxygen-sensitive food ingredients, such as vitamins and unsaturated fatty acids. For example, in collaboration with the van Gogh museum we are developing tools to map the light effects of innovative protective coatings. The build-up of undesirable species in recycling is monitored to meet the ever more stringent regulatory hurdles and provide full transparency and uncompromised safety.

Outlook

Mankind is facing massive challenges. At Unilever, we continue to work with others to focus on those areas where we can drive the biggest change and best support the United Nations Sustainable Development Goals. Analytical chemistry is a key enabler in this process. Our tools and technologies allow us to understand advances in new food ingredients, smart manufacturing methods, next generation packaging etc. to the smallest detail – at the all-important molecular level. This ultimately allows our R&D teams to strive for consumer and sustainability benefits with a real impact.

Unilever Research Prizes 2018

programme 27 November 2018

- 12:00 Arrival of guests of the Unilever Research Prize Winners
- 12:30 LUNCH & Poster Presentations Prize Winners
- 13:30 Welcome and Introduction of the Unilever Research Prizes
Lou Lievense - Vice President Global R&D and Site Leader Unilever R&D Vlaardingen
- 13.40 External lecture
Wim van Saarloos – President KNAW, professor at Leiden University
'The Dutch poldermodel of science and R&D'
- 14.05 Scientific lecture
Hans-Gerd Janssen – Science Leader Analytical Sciences 'Small molecules, big impact'
- 14:30 BREAK
- 15:00 Presentation of the Unilever Research Prizes – Part 1
David Blanchard - Chief R&D Officer
- Short pitch by winner of the Unilever Research Prize 2018
- Presentation of the Unilever Research Prizes – Part 2
David Blanchard - Chief R&D Officer
- Short pitch by winner of the Unilever Research Prize 2018
- Presentation of the Unilever Research Prizes- Part 3
David Blanchard - Chief R&D Officer
- 16:00 Closure and Drinks



Wim van Saarloos
President KNAW,
professor at Leiden
University



David Blanchard
Chief R&D Officer

Wim van Saarloos

As of 2017, Wim van Saarloos is professor of Theoretical Physics at Leiden University, combining his position first with that of vice president, and since June 1 2018, with that of president of the KNAW (Royal Netherlands Academy of Arts and Sciences).

After obtaining his PhD in theoretical physics at Leiden University in 1982, Wim van Saarloos joined AT&T Bell Laboratories in the USA as a researcher. In 1991 he returned to Leiden University in the Netherlands. His research as a professor of theoretical physics focused on statistical physics, nonequilibrium pattern formation and soft condensed matter physics. While in Leiden he was also the founder and long-time director of the Lorentz Center (1997-2009), an international center for scientific workshops. In 2009 he became the director of the national foundation for Fundamental Research on Matter (FOM) in the Netherlands, which was part of the national funding agency NWO and which was the parent organization of four research institutes. In 2015 and 2016, he led the preparation for the transition to the new NWO organization.

David Blanchard

David Blanchard has been Chief R&D Officer since April 2014. In this role, he is accountable for R&D delivering sustainable growth for Unilever through innovation.

This includes oversight of the future development plans across R&D in the Beauty & Personal Care, Home Care and Foods & Refreshment Divisions at Unilever. David has direct leadership of R&D in the Beauty & Personal Care Category, a position he has held since 2012.

David also has direct leadership of the Global R&D Organisation; this includes the capabilities such as Safety & Environmental Assurance, Regulatory Affairs and Digital R&D.

During his career, David has held a number of positions, including roles outside of R&D. He joined Unilever in 1986 as Development Manager for Spreads. Other previous roles include Senior Vice President for Unilever Research & Development; Chairman of Unilever Canada; Senior Vice President Marketing Operations Foods America; Vice President R&D for Global Dressings.

David joined the Unilever Executive in 2013. He is also a Non-Executive Director of Ingleby Farms & Forests.

Winners

University of Amsterdam
Olga van de Ven

VU Amsterdam
Maxime van Boven

Delft University of Technology
Marloes Arts

Eindhoven University of Technology
Martin Kristelijn

University of Groningen
Wouter Muizelaar

Leiden University
Lukas Kiefer

Maastricht University
Lea Andrée

Radboud University Nijmegen
Pieter Gilissen

Erasmus University Rotterdam
Zakia Essanhaji

Tilburg University
Mara Verheijen

University of Twente
Giorgos Kafkopoulos

Utrecht University
Charlie Maslen

Wageningen University
Martijn van Galen

The sculptures awarded to the winners of the Unilever Innovation and Research Prizes were designed by the Dutch artist Elly Rosseel.

Ms. Rosseel employs a fusion technique, using burnished glass to bring her creations to life.

The sculptures designed for the Research Prize gives the impression of a hatching bird's egg, symbolizing the birth and emergence of new talent. The egg's open lid and upward pathway gives an impression of a future for the winner being rich with expanding possibilities

Elly Rosseel - Kok
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