Nestlé
Good Food, Good Life

1866–2017

Nestlé Research
150 years of enhancing quality of life and contributing to a healthier future

1866–2017

A cluster of cherries from a coffee plant, at our experimental farm in Zambakro, Ivory Coast

Since our company started, we have been researching ways to improve lives through nutrition. Our founder Henri Nestlé was a food pioneer whose infant cereal not only saved the life of a child, but helped the infant grow and thrive. Today we have the most advanced science and innovation network in the food industry. The strength and depth of our Research and Development make us stronger, and help us respond to the major changes we see in society. We are constantly building a deeper understanding of nutritional science, and developing products that enable us to fulfil our purpose: enhancing quality of life and contributing to a healthier future.

Paul Bulcke
Chairman

Mark Schneider
Chief Executive Officer

The science that supports our brands

People in Nestlé Research help enhance quality of life and contribute to a healthier future everywhere, every day. We constantly extend our knowledge about how the body works – from gut to skin to brain – and how the right nutrition, coupled with a healthy lifestyle, can help it work better.

Our success is grounded on being inspired by nature and doing no harm, with safe products that support business strategies. Our approach is guided by our values, rooted in respect: respect for ourselves, for others, for diversity and for the future.

This booklet takes a look into the history of this journey and a brief glimpse at what tomorrow may bring with new science and technologies that will venture into the digital world of personalised nutrition.

We want to acknowledge the major contribution of our colleagues and experts, past and present – the scientists, doctors, statisticians, engineers and nutritionists whose knowledge, passion and dedication have delivered the science behind Nestlé's brands for over 150 years.

We would like to thank everyone who makes this valuable work happen, every day, and particularly those who gave their time to help produce this booklet.

Patrice Bula
Head of Strategic Business Units,
Marketing & Sales,
and Chairman of Nespresso

Stefan Catsicas
Chief Technology Officer

A brief glimpse into our journey

1860s

Henri Nestlé invents Farine Lactée and the company, along with its science-based nutrition, is born. **From vitamin enhancement to probiotics**, see pages 06-07 for innovation in infant cereals.

1883

Julius Maggi launches his revolutionary 'complete soup meal', Maggi Leguminosen, to help combat infant malnutrition. See how Maggi delivers **flavour and micronutrient fortification** on pages 08-09.

1934

MILO is created during the Great Depression as a way to help children get the **vital nutrients** they need. Find out about Active-Go and other breakthroughs in MILO's development on pages 10-11.

1935

Rowntree's of York invents the patented **Vacuum Box method** of creating bubbly chocolate and AERO is born. There's a wealth of AERO science and technology breakthroughs on pages 12-13, and more on how we work towards reducing sugar on page 33.

1938

Nestlé scientist Dr. Max Morgenthaler invents a method for drying coffee bean extract, and NESCAFÉ is born. From advanced aroma technologies to **the whitest cappuccino,** NESCAFÉ's key selected innovations are on pages 14-15.

1958

The world first hears 'have a break, have a KITKAT', the slogan still used today! Find out about creating **the crispiest wafers** and other science behind the 'break' on pages 16-17.

1961

The first NAN formula was launched in Mexico. The liquid milk was the result of scientific research to find infant food that resembled breast milk. The formula used **demineralised whey** to achieve this. See pages 18-19 for more on this cutting-edge baby nutrition product.

1986

Our first NESPRESSO machine hits the market, extracting coffee at 19 bars in four varieties. On pages 20-21, read about the **NESPRESSO machine** and other market-changing innovations.

1994

With its unique combination of complete, balanced nutrition and pleasant taste, BOOST Nutritional Energy drink is launched. See pages 24-25 to find out more and to learn how **retort processing** is used to sterilise this product.

1998

Nestlé Pure Life water is launched in Pakistan, purifying local water with a best-in-class quality treatment to make it **safe to drink**. On pages 26-27 you can see how Nestlé is even able to add vital micronutrients to Pure Life.

2004

We introduce our breakthrough Slow Churn technology to create luxuriously smooth and creamy ice cream that is miraculously **lower in fat**. See pages 28-29 for the way our materials science is transforming ice creams.

2006

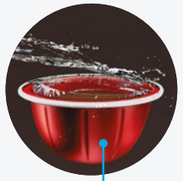
FortiFlora is launched as the first probiotic in a therapeutic diet line proven to **promote intestinal health and balance**. See how Nestlé science is helping to keep pets healthy in body and mind on pages 30-31.

2011

Nestlé Health Science is formed to advance the **therapeutic role of nutrition** to change the course of health management. Find out about Nestlé Health Science innovation for Intensive Care Unit patients on page 34.

2014

After seven years of R&D, our NESPRESSO VertuoLine system is launched in North America. See pages 20-23 for our innovation in systems technology.

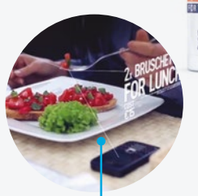


2015

Created in 2014, Nestlé Skin Health's vision is to enhance quality of life by delivering science-based solutions for the **health of skin**, hair and nails. Galderma, Nestlé Skin Health's medical solutions business, received **Food and Drug Administration (FDA) approval for Epiduo Forte**, the once-daily topical skincare treatment. See page 35 for more information on skincare innovations.

2016

We're working to create a new digital health platform for personalised nutrition, lifestyle and fitness linked to the 'Internet of Things'. See pages 32-33 for some of these exciting **future developments**.



2017+

Nestlé scientists are working to understand the links between our gut and skin microbiome. See page 36 to find out more about how Nestlé Research takes inspiration from nature to address the **gut/skin/brain nexus**.

1866–2017

Helping to create first spoonfuls for 150 years

It's been an incredible 150 years for Infant Cereals, Henri Nestlé's founding product. And the story's not over yet: we're determined to continue leading the world of Infant Cereals, nurturing healthier children through science-based nutrition, for generations to come.

›1860s

Henri Nestlé invents the **first nutritionally complete meal for infants** as a way to combat high levels of child mortality. He uses the best ingredients, including same-day fresh milk from the Swiss Alps.

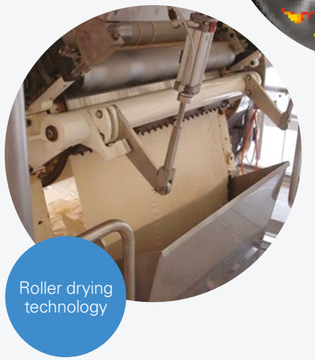
His product is safe, long-lasting and easy to use; he introduces the highest standards of quality and hygiene before they are mandatory.

›1867

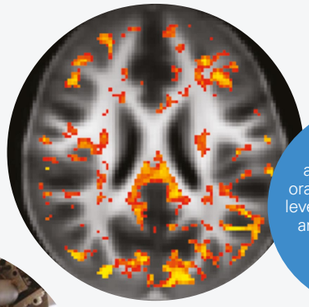
Henri Nestlé calls his product Farine Lactée. So proud is he of the cereal, he puts his name on the tin – and Nestlé is born.

›1874

Nestlé's Infant Cereals are sold in 18 countries and across every continent.



Roller drying technology



Significant associations (red-orange) between iron levels in infant formula and myelin content in the brains of young children

›1929

The scientists behind the **discovery of vitamins** are awarded the Nobel prize. We add vitamins to our Infant Cereals the same year.

›1948

Using the latest technologies, **we develop an 'instant' recipe**, making our product even more convenient and easy to prepare.

›2009

The first global roll-out of Infant Cereals with **added probiotics** to help strengthen a baby's natural defences.

›2015

Over 14,000 servings are consumed every minute, across 180 countries. **Great Nutrition** for Small Tummies benefits millions of infants around the world!

›2016+

We're adding a whole range of nutrients, including iRON+, to our cereals, to support **cognitive development** and help children reach their full potential.

1866–2017

Building on the magic of Maggi for 134 years

Maggi was created to provide nourishing and affordable food for workers. 134 years later, it's one of our billion dollar brands, recognisable around the world for passing on the goodness of homemade food. The innovative principles on which it was founded continue to drive its development forward today. Maggi is a brand that never sits still.

›1882

A chance encounter brings together Julius Maggi and Dr. Fridolin Schuler. Maggi sees that **the changing world of work is impacting how families eat**. Women no longer have time to prepare wholesome food at home. Schuler recognises a link between malnutrition, disease and infant mortality.

›1883

After two years of development, Julius launches a revolutionary 'complete soup meal' under Maggi Leguminosen, a **nutritious, affordable and convenient** pulse-based soup.

›1886

The soups are quickly followed by the invention of Maggi seasoning, a concentrated liquid bouillon to enrich the **taste and flavours** of everyday meals.

Laboratory for biohydrolysis and fermentation for Maggi Liquid Seasoning

Koji fermentation process

›1908

Maggi launches his bouillon in a pressed convenient cube format, to allow for a longer shelf life – providing **unmatched flavour richness** to food.

›1909–1980

Maggi continues to **innovate and push the boundaries of food technology** to meet consumer demands.

As of 1947, we build on Maggi's successful **flavour creation** capabilities, by bringing **traditional Asian fermentation** methods to Europe and leveraging new breakthrough food preservation techniques.

›2005

We look at ways to **reduce the salt content** of Maggi products. Since then, we've helped **reduce salt intake by over 10,000 tons, equivalent to the weight of the Eiffel Tower**.

Based on our Maggi heritage, Nestlé Research also developed granulation technology, to lock the goodness and **taste of fresh vegetables** into a powdered 'All-In-One' seasoning.

›2012

Scientists find a way to fortify the Maggi cube with iron, to help people address **iron deficiencies**.

The cube today delivers some **95,000 iron servings** per minute in Africa.

The same year, a seasoned cooking paper is invented allowing for **perfectly cooked and marinated** meat and fish without the need to add salt and oil.

›2016+

Julius Maggi's products can be found across the globe, and thanks to combined efforts by the business, operations and Nestlé Research, they remain **safe, tasty and nutritious**: a true helper for cooking every day with fresh ingredients.

1866–2017

Providing wholesome goodness for over 80 years

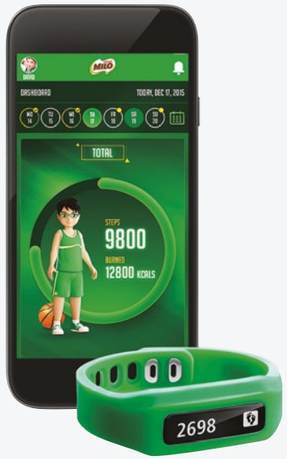
MILO's unique recipe, using the natural goodness of malt, cocoa and milk, has provided balanced nutrition to children around the world for over 80 years. And today, it remains as popular as ever: over 28 million cups of MILO are consumed every day – that's over 840 million cups a month, enough to fill almost 100 Olympic swimming pools!

›1934

Thomas Mayne, an Australian industrial chemist, created MILO during the Great Depression as a way to **help children easily get the nutrients they needed**. He launched his product at the Sydney Royal Easter Show, and named it MILO after the Milo of Croton, an ancient Greek athlete known for his legendary strength!

›1950

Later, MILO continues to **provide nourishing energy to children around the world**, including Africa, Latin America and Asia. To this day, MILO teaches children the value of sports, building champion spirit in them.



›1990

We expand MILO into multiple formats to **suit different individual needs**. As well as the original powder product, MILO comes in liquid ready-to-drink formats for lunchboxes, and by 2014, MILO even comes as a Nescafé Dolce Gusto pod.

›2000

We continue to improve and adapt constantly the nutritional value of MILO, finding ways to introduce relevant vitamins and minerals through branded active benefits like Protomalt, ActigenE and, most recently, Activ-Go. Activ-Go is made from a unique malt extract that provides nourishing energy and a special blend of vitamins and minerals **helping children to do their best**.

›2010

We use **state-of-the-art science** to adapt the nutritional composition of MILO according to the changing requirements of our consumers. And as we do this, we seek to ensure minimal disruptions to our manufacturing processes, while retaining the goodness of our core ingredients.

›2016+

Individual needs continue to change! People have high expectations around convenience, nutrition, environmental sustainability and technology. **Innovation remains central to MILO's success** and we roll out digital solutions in key markets, allowing parents to better understand the energy and nutritional requirements of their children, and support them in their journey to being champions.

We have helped to improve and evolve our product over the years. But the MILO ambition has remained constant: we help parents to give their children the wholesome, nourishing energy needed for them to achieve their best, every day.

1866–2017

A story of incredibubble science and technology

AERO is a truly iconic product; delightful chocolate bubbles that melt effortlessly in the mouth, sold across the globe in a huge variety of flavours and forms. The science and technology behind the product made it unique from the start, and keep it one of the world's favourites today.

›1935

Rowntree's of York, England, invented the patented Vacuum Box method of creating bubbly chocolate. **The sensation of bubbles melting in the mouth** delighted customers, and AERO became a huge hit.

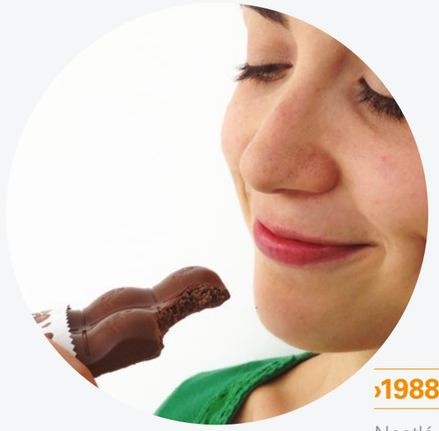
›1959

Variety is the spice of life, they say, so AERO flavour variants are introduced. This starts with the ever-popular mint, and over the years has included dark and white chocolate, latte, orange and even green tea.

›1982

It's important to keep your precious AERO in perfect condition so 'flow wrap' is introduced for **freshness and quality**. It enables us to introduce more formats and sees AERO entering the chocolate confectionery bar 'on-the-go' market, making AERO a light indulgence for everyone.

'Conching' gives chocolate its smooth texture



›1988

Nestlé bought Rowntree's and added AERO to its portfolio of chocolate brands along with its own expertise in aeration and food materials science.

›1991

A new, **patented method is introduced for producing AERO more efficiently and consistently** than ever before. The wonderful bubbles of chocolate are now created using pressurised CO_2 meaning that aerated chocolate can be moulded continuously – watch out world, AERO is coming to you!

›2005

Who would imagine that AERO Bubbles, those globes of deliciousness, are actually the product of **three different types of proprietary technology** for aerating, moulding, and filling, meeting in one perfect sphere?

›2015+

Adapting the depositing and aerating technology even further leads us to the double texture and taste sensation that is AERO Mousse – a layer of soft, aerated mousse on a bed of AERO chocolate. No wonder it's **voted confectionery Product of the Year** in the UK's largest consumer-voted awards for product innovation.

AERO continues to go from strength to strength with the launches of AERO Mousse in the UK, Carlos V in Mexico and Nestlé AERO 'Milk' and AERO 'Duo' tablets in Chile.

In the future, invisible tiny bubbles will bring surprising texture and sensations to other brands.

1866–2017

Helping to create great coffee for 78 years

From the very beginning, Nestlé Research has been fundamental to NESCAFÉ's success. The coffee market is fast moving and highly competitive: science has proved to be our key advantage to staying ahead. As we look to the future, Nestlé Research is proud to contribute to driving this pioneering brand forward.

›1920–1938

Nestlé is asked to help make use of a surplus in Brazilian coffee beans. Nestlé scientist Dr. Max Morgenthaler is assigned the project. A chemist by profession, he **invents a method for drying coffee bean extract** – and NESCAFÉ is born.

›1950s–1970s

By 1950, NESCAFÉ is one of Nestlé's flagship brands. It's the most consumed coffee globally. We continue to improve the product, **using science to dry coffee in a frozen state and introduce new extraction technologies**.

›1970–2005

People love the aroma of fresh coffee, but this aroma degrades very quickly. **Advanced aroma technologies** allow us to recover most of the key aroma components in the roaster beans.

Individuals are looking for different types of instant coffees. We give them an authentic cappuccino by **encapsulating nitrogen**, delivering the foam quality and quantity they're looking for.

›2005–2010

We continue to innovate, introducing NESCAFÉ DOLCE GUSTO: a portioned coffee system allowing consumers to enjoy **premium freshly ground coffee** at home.

We invent a drying method to provide a creamy indulgent crema layer on our espressos and start to add finely ground coffee beans to our premium NESCAFÉs.

›2013–2015

Our cappuccinos are better than ever, with a dense and indulgent white foam. **We re-invent coffee mixes** with Blend & Brew (White Espresso technology) to deliver a fresher coffee aroma; and **revolutionise our aroma technology** by removing all harsh and undesirable notes. In our black cups, we add micronised whole coffee beans to boost fresh and authentic aroma notes.

›2016+

The world of coffee continues to evolve. This means exciting opportunities for our products: cold brewed and artisanal coffees; hand crafted black coffees; indulgent, nutritionally balanced white cups; and convenient formats for on-the-go drinking. NESCAFÉ has come a long way in 78 years – we're looking forward to ensuring our continued success long into the future!

1866–2017

The very best of breaks around the globe

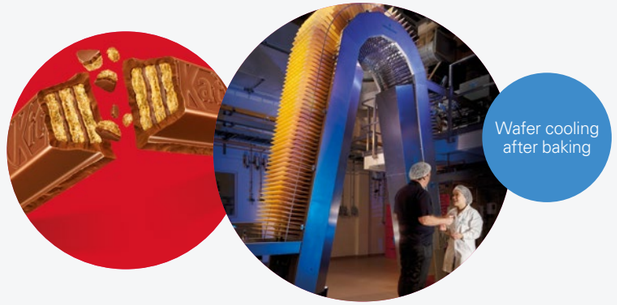
12,683 KITKATs are eaten around the world every minute. And in the second it takes you to read to the end of this sentence, a further 211 KITKATs will have been eaten. Just what is it that makes this billionaire brand so consistently popular?

›1935

Rowntree's launches the 'Chocolate Crisp' with its **uniquely 'trapezoidal'** fingers designed to fit neatly into lunch packs. In 1937, the product is relaunched as a KITKAT and advertised as 'The Biggest Little Meal in Britain'.

›1944

During World War II, milk shortages mean that KITKAT has to be made with dark chocolate, and the packaging turns blue to show the difference.



Wafer cooling after baking

›1958

The advertising slogan **'have a break, have a KITKAT'** is launched, cementing KITKAT as a favourite accompaniment to a cup of tea. This slogan is still used today!

›1998

Our support proves crucial to the KITKAT expansion around the world: by developing a **unique set of enzymes**, we make it possible to use local wheat flour wherever KITKAT is produced. So wherever KITKAT consumers take their break, the characteristic KITKAT crisp remains the same.

›2004

We develop a production method on KITKAT to ensure that we deliver the **preferred KITKAT chocolate taste** to local consumers every time.

›2010

Nestlé Research develops MCF, 'Mastering Chocolate Flavour', a technology to ensure consistency of chocolate flavour is delivered in the most efficient way.

›2016+

The Nestlé Cocoa Plan helps KITKAT become the **world's first confectionery product sourced from 100% sustainable cocoa**.

We continue to help KITKAT create world firsts: from personalised KITKAT boutiques in Australia and Japan, to creating a gold leaf KITKAT to celebrate Chinese New Year! Thanks to our work, consumers get the very best experience from KITKAT, wherever and however they take their break.

Read more on how Nestlé works towards reducing all sugar in confectionery on page 33.

1866–2017

Supporting infants' healthy growth and development

We believe breast milk is the ideal nutrition for babies. This is why we promote the World Health Organisation recommendation (the WHO Code) to exclusively breastfeed infants for the first six months of life, followed by the introduction of adequate nutritious complementary foods along with sustained breast-feeding up to two years of age and beyond.

Emerging science continues to drive our understanding of infants' growth and development. We now know a baby's very first nutrition can impact its health right into adulthood. Since the 1960s, our NAN brand has been at the cutting edge of this science. Inspired by nature, we are developing infant formulas designed to be as close as possible to the composition and benefits of the gold standard: breast milk.

›1961

Our first NAN formula is launched in Mexico. This liquid milk is the result of scientific research to create an infant food closer to breast milk, particularly in terms of protein composition. Our first NAN formula used **demineralised whey to bring the casein/whey ratio and essential amino acid profile closer to breast milk**.

State-of-the-art spray-drying technology to ensure nutritional superiority of our infant formula

›1987

By modifying the whey proteins using a unique hydrolysis process, Nestlé Research successfully creates NAN HA, the first partially hydrolysed starter infant formula which **reduces the risk of Atopic Dermatitis, a type of eczema, by 50%**, compared with intact cows' milk protein-based infant formulas.

›1991

We added **probiotic bifidus cultures** to NAN, to help support baby immune defences and reduce the risk of diarrhoea.

›2001

Nestlé Research develops a **unique proprietary whey technology**, which enables us to improve protein quality and reduce protein content. The protein content and the amino acid profile of NAN are now even closer to breast milk.

›2004

Special fatty acids (LC-PUFAs) are added to NAN because of their importance for brain and visual development and immunological functions.

›2015+

NAN Optipro, the **first infant formula with optimised protein quality and quantity** to deliver short- and long-term metabolic health.

Nestlé Research continues to push the boundaries of milk technology.

We're working now on the carbohydrate composition of infant formula to be able to replicate human milk oligosaccharides, which are found in breast milk.

1866–2017

Delighting people with Nestlé Systems

It all started 30 years ago with a simple but revolutionary idea: what if anyone could make the perfect espresso coffee at home? Nestlé rose to the challenge with NESPRESSO followed by a new range of machines and single-serve capsule systems. As the innovations continue, we've evolved our systems beyond espresso, and even coffee, to reinvent the way millions of people prepare their drinks every day.

›1986

NESPRESSO launches a revolutionary system of coffee capsules and machines that enable anyone to brew **the perfect espresso at home**.

These innovative capsules are central to the brand's success. Once inserted, they are pierced and processed, while water is forced against a heating element at high pressure (19 bars). This ensures that coffee is extracted under the perfect conditions. Offering a new and incomparable cup quality with convenience, it is the start of something big: a continuous innovation journey.

›1999

NESPRESSO Professional is launched with a new range of dedicated machines designed for more intensive use in small offices and in the premium food service sector.

Our new system includes a tailor-made extraction head and specially adapted capsules, **enabling us to produce great-quality coffee in larger quantities**.

›2006

The first high-pressure multi-beverage system is launched, delivering a large premium coffee shop menu at home at the touch of a button. NESCAFÉ DOLCE GUSTO offers a choice of unconventional machine designs with professional pressure (up to 15 bars). Its unique **Play & Select allows consumers to personalise their beverage with consistent quality every time**, and its capsule technology is designed for multi-beverage optimal performance, including aroma freshness protection.

›2009

NESCAFÉ GOLD BLEND Barista system is launched in Japan. The specifically designed machines release the best of NESCAFÉ GOLD BLEND and beautiful coffee topped with 'crema'. Thanks to a unique milk or creamer frothing technology that does not require cleaning, **it creates beautiful layers in cappuccinos and lattes with fresh milk or creamer at the touch of a button**.

1866–2017

›2010

Nothing beats a soothing cup of tea, and our SPECIAL.T system makes it easier than ever for consumers to prepare one. Following five years of R&D, more than 20 patents and over 30 years of portioned system expertise, **Nestlé Research perfected the interaction between smart capsules and an intelligent machine for the perfect infusion**.

›2011

Our BABYNES® smart feeding system is launched as an invaluable aid to parents of infants and young children. It combines a dissolution technology dispenser with a capsule of **specifically developed baby formulas to enable the preparation of a correctly dosed, nutritional, hygienic and safe bottle** at the right temperature – all in under a minute. The Wi-Fi enabled machines also offer online and smartphone app services to help parents understand and track their baby's growth and changing nutritional needs.

›2013

We launch a range of systems for NESTLÉ PROFESSIONAL Beverages. The Nescafé Milano, Nescafé Alegria, and CoolPro machines are designed with 'simplexity' in mind: **they're even simpler to operate, and deliver a broad range of hot and cold beverages** that people love. Our latest models even include an 'Internet of Things' feature, which allows machines to be configured and serviced more rapidly in real time.

›2014+

After seven years of R&D, our NESPRESSO VertuoLine system is launched in North America. Designed to make either a premium long coffee or an espresso, VertuoLine brings a whole new level of interaction to our coffee machines. It uses barcode technology to sense capsule size, recognise the coffee blend, and adjust the temperature and extraction parameters accordingly for each cup of coffee. Thanks to the unique Centrifusion™ technology, developed with advanced mathematical simulation methods, VertuoLine is now the only system on the market to produce long coffees with 'crema' – the hallmark of a quality espresso.

Mathematical simulation of the dynamic pressure profile due to the centrifugal forces inside the VertuoLine capsule

As our way of life evolves, new systems opportunities will arise beyond beverages and Nestlé Research will continue to be a key innovation leader and provider, surprising and delighting people every day.

1866–2017

Nutrition to boost your active lifestyle

BOOST® Nutritional Drinks are an excellent source of many key nutrients including protein, vitamins and minerals. Each drink offers unique nutritional solutions that help to meet a wide variety of dietary needs. And with the great taste that only Nestlé can bring.

›1994

BOOST Nutritional Energy drink is launched as a great-tasting alternative to the existing nutritional supplement drinks. Each serving provides a complete nutrition including protein and essential vitamins and minerals. To maintain purity, **BOOST is produced via retort processing** which sterilises the product inside its container.

›1995–2003

Doctors, dieticians and consumers become fans of BOOST's unique combination of complete, balanced nutrition and pleasant taste. BOOST gains usage in hospitals and continues to be sold in retail stores to help people meet their health and wellness needs.

›2004

BOOST brings innovation to the category by being the first complete nutritional drink to move from a **metal can to a plastic bottle**.

›2005

BOOST is the first product of its kind to be marketed with a **patented macronutrient ratio** (1:1:1 carbohydrate:fat:protein) to help people with diabetes manage their blood glucose levels.

›2011

BOOST delights consumers with a **fully redesigned product, process and packaging**. Product developers leverage Nestlé's aseptic expertise to develop consumer-preferred flavours. The R&D team successfully **achieves the required high barrier property requirements** for a nutritional product through introduction of a novel PET-based bottle.

›2012

BOOST innovates again by providing a **Taste Guarantee** enabling consumers to get their money back if they are not fully satisfied with the great taste of BOOST.

›2015

Setting the stage for clean label by design, Boost Simply Complete delivers complete nutrition in **"simply 9 ingredients"**. Great taste with 10 grams of protein, no artificial flavours, sweeteners or colour and no GMOs.

›2016+

We continually seek to improve the nutritional profile of our products. Recent formula innovations have focused on **reducing sugar levels** by as much as 29% per serving, or adding fibre to some formulas, while always maintaining the great taste our consumers expect.

1866–2017

Championing healthy hydration for nearly 20 years

We are passionate about water: it is essential for life and our most precious resource. As the global number one bottled water brand, we understand the vital nature of water and water sources.

›1998

Nestlé Pure Life is launched in Pakistan. We purify local water, with a **best-in-class quality treatment**, making it safe to drink. Our sources and bottling facilities are located close to our local consumers. It reduces the environmental impact of delivering our always fresh and crisp tasting water to individuals and families by cutting distribution distances.

›2000

We already make our waters **available to individuals in convenient bottle formats**. Now, in response to popular demand, we launch HOD containers: large, 20 litre containers for use in the home and office.

›2006

Research shows how **important the taste of water** is to people. They choose Nestlé Pure Life because of its great taste. So we use Nestlé expertise to understand the taste of water, the role of mineralisation and local taste preferences. Our panel of water tasters include chefs, wine tasters – even a tea master! They drink waters from all over the world and we map their characteristics through chemical analysis. In this way, we learn how mineralisation drives taste. Pure Life is THE global brand that meets consumer preference locally.

›2008

Our waters have always tasted great. Now, we help to make them healthier too. We develop the capability to fortify Nestlé Pure Life with zinc to help individuals and their families balance nutritional deficits.

Hygienic filling in our pilot plant for consumer preference testing

›2013+

Since our launch in 1998, **we've worked hard to make our operating practices responsible and sustainable**. So we've reduced the amount of water used on our production lines by ~50%; our packaging weight is reduced by ~30%; and our energy use by ~25%. And by keeping our operations as close to our consumers as we can, we are able to minimise our distribution impact too.

A passion for purity, taste and sustainability is what drives, and will continue to drive our efforts to maintain the leading position which Nestlé Pure Life enjoys with our consumers and stakeholders. Innovative water purification technology is one of our priorities to guarantee quality and future access to new water resources, helping our operations achieve a zero water footprint. Water is the best carrier for nutrition, and we continue to research technologies for fortifying Nestlé Pure Life to offer meaningful nutrition solutions. We also work extensively on our packaging materials to ensure we meet the promise of purity, using materials from renewable resources with the lowest possible environmental footprint.

As we look to the future, water conservation is a key priority. So we continue to protect our sources and to engage with communities, farmers and other water users to drive sustainable practices and assure healthy, great-tasting drinking water for future generations.

1866–2017

Making our indulgent treats healthier and more natural

Nestlé's involvement with ice cream started in the mid-90s, but the innovations that have arrived in the past 10 to 15 years are making this product category more exciting than it has ever been! Now, our focus is all about 'nutritious indulgence', delighting consumers and customers not only with taste and feel, but with simple, healthier and tastier products.

›2000–2002

A premium ice cream must be consistently delicious and high-quality. Nestlé Research introduces unique ingredient technologies to keep the precious components in ice cream stable throughout its shelf life, and offer creamier products too. The results speak for themselves with **substantial improvement in ice cream quality across the range** and in every batch, from the ice cream factory to your home freezer.

›2004

Even pets deserve a little luxury – but a dog is naturally intolerant to lactose so it's no good giving him your Dreyer's! Instead, our Purina labs create Frosty Paws Peanut Butter flavoured ice cream for dogs – which their research says is a dog's favourite flavour.

›2004–2005

The Slow Churned range of products is introduced with our proprietary Low Temperature Extrusion technology which makes **premium products luxuriously smooth and creamy, but – remarkably – lower in fat**. This breakthrough technology enables us to make a claim of half the fat, a third of the calories and yet the pleasure of full fat. Our scientists spent more than 10 years researching and developing a process that modifies micro-structure and spreads fat particles more widely in the ice cream, making half the fat go twice as far in your mouth.

›2016+

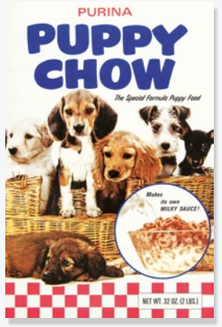
What's better than nutritious indulgence? Natural nutritious indulgence! By understanding the science of the proteins and ingredients in milk, we developed new ways of making ice cream that means no added artificial or chemical-sounding ingredients. Our 'Simple Recipe' Slow Churned Dreyer's ice cream leads the way because it's **deliciously rich and creamy but with less fat**, fewer ingredients and a clean label. Materials Science at its best!

The research we have invested in over the past decades opens up new possibilities for Nestlé ice cream brands. We are looking at boosting protein, reducing sugar and saturated fat, keeping – and even improving – the sensations and taste that people love while making our products more nutritious. We are finding new ways to give consumers exciting formats and shapes, large inclusions, and multi-textural treats with delicious coatings, nuts or crispies. It's a world away from plain vanilla and chocolate blocks!

1866–2017

Providing safe and high-quality nutrition for pets for 90 years

Pets and people are better together. This fundamental belief has pushed us to drive pet nutrition forward for 90 years. Every day, over 500 pet experts around the world, including nutritionists, veterinarians, behaviourists and immunologists, use their expertise to enrich our knowledge about pet nutrition and care. Our mission is to help promote a long, happy, healthy life for every pet.



The core of our expertise is pet nutrition – we study, improve and study again to be certain all of our foods perform to their very best. Our experts consider every area of pet health, including happiness and physical fitness, in order to help give pets better lives.

›1963

We recognise that puppies have **different nutritional needs** than adults, and create a dog food especially for younger dogs.

›1987

We create an innovative dry dog food process for PRO PLAN, using real meat as the **number 1 ingredient**.

›1998

We launch our **first truly hydrolysed diet** for food-allergic dogs. HA Hypoallergenic complements our other specialist products, which include a functional pet food to promote urinary tract health, and MCTs (Medium Chain Triglycerides) to help manage gastrointestinal disease in dogs. We also add prebiotics to promote digestive health in our FRISKIES Digestion+ range for dogs.

Nestlé Purina scientists have discovered an efficient fuel source for the ageing dog's brain

›2000

DM (Dietetics Management) is **high in protein and lower in carbohydrates** to manage feline diabetes.

›2002

The Nestlé Purina life span study is the first life-long diet restriction study in dogs. This study demonstrates that both **longevity and quality of life benefit from feeding to ideal body condition** from puppyhood throughout life in Labrador Retrievers.

›2004

JM (Joint Management) food is launched as the first diet nutritionally formulated, using nutrigenomics, to **help improve mobility** in arthritic dogs.

›2006

FortiFlora is launched as the first probiotic in a therapeutic diet line proven to **promote intestinal health and balance**.

›2009

PURINA ONE Vibrant Maturity 7+ is launched, containing a special blend of enhanced botanical oils proven to **enhance alertness and mental sharpness** in dogs.

›2014

A world first: we introduce **personalised dog food**, with individual recipes created based on what pet owners tell us about their dogs.

›2015

PRO PLAN BRIGHT MIND ADULT 7+ for dogs is launched. Owners report visible results, including **alertness and mental awareness within 30 days**!

›2016+

PRO PLAN BRIGHT MIND ADULT created to help support cognitive health in adult dogs, with a proprietary blend of **brain-supporting nutrients**. These stunning data generate insights into human cognitive performance.

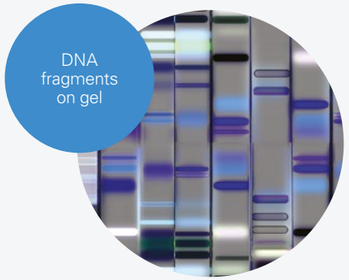
1866–2017

Meeting the nutritional needs of tomorrow

As our understanding of food and nutrition continues to grow, our global research and development network is looking ahead to discover how we can enhance quality of life and contribute to a healthier future for everyone. Our confidence reflects a 150-year history of successfully anticipating people's needs – a strategy that remains fundamental to our success.

Personalised nutrition through the 'Internet of Things'

One of Nestlé Institute of Health Sciences' (NIHS) and Nestlé Research Center's (NRC) most exciting areas of research is personalised nutrition. By giving people a **better understanding of their own individual nutritional status**, lifestyle, environment and genetics, we can make health preservation more personal. As part of this work, we have begun collaborations to harness the power of nutrition science and digital sensor technologies. Together, we're creating a new digital health platform that will empower individuals by providing personalised recommendations around nutrition, lifestyle and fitness. We live in an era where the data from sensors and devices in our daily lives, such as mobile phones, wearables, and 'smart' homes, can help us to understand our nutrition and activity, and guide us towards a healthier lifestyle. Our long-term aim is to combine this 'Internet of Things' technology – the growing ability of these devices in our lives to connect with each other – with breakthroughs in nutrition science, so we can empower people to take greater ownership of their quality of life.


DNA fragments on gel

Supporting healthy ageing

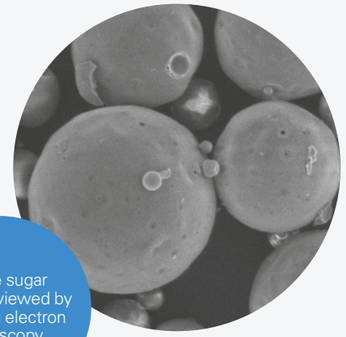
In order to support the nutritional needs of an ageing demographic, we've substantially expanded our Research and Development capability in Singapore. We now look forward to bringing new insights into older people's lifestyles to enrich their wellbeing, cognition, health and longevity.

There is plenty of evidence that **special nutrition may help to address health concerns** that become more common with age. That is why Nestlé Health Science has developed the Boost® and Meritene® ranges.

Nutritional needs evolve with age as the **body's ability to efficiently digest** and absorb nutrients declines. The resulting lack of essential nutrients can then impair body functions, cause feelings of fatigue or weakness and result in mobility issues.

Boost® (see pages 24-25) is a range that includes a line of nutritional drinks designed for individuals who need extra nutrition to fill gaps in their diets, who have lost their appetite, and individuals who have difficulty preparing meals. Boost® products can be used as a mini-meal or as a between-meal snack. They contain high-quality protein and vitamins and minerals, including calcium and vitamin D.

Meritene® is a range of nutritional solutions designed to address age-related health challenges. Each Meritene® formula consists of one or more nutrients such as dietary fibre, protein, vitamins and minerals. By providing these missing nutrients, these products can help **active seniors enjoy a better quality of life**.


Nestlé sugar particles viewed by scanning electron microscopy

Food Materials Science for a healthier diet

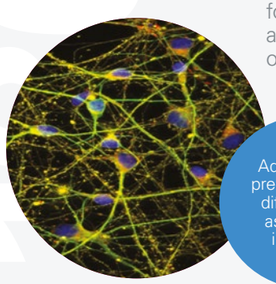
We're constantly on the lookout for ways to improve the nutritional quality of our products, without compromising on consumer liking. One of the ways we do this is by using Food Materials Science – we take **inspiration from nature** to distribute and make bioavailable natural ingredients in our products.

By understanding the functional properties of the ingredients we use, our scientists can make them work harder. For example, sometimes sugar or salt aren't fully dissolved during consumption – so our consumers don't get the benefit of the flavour but end up eating them anyway. By applying Food Materials Science for a healthier diet, we can find new ways to enhance how ingredients behave – including how they get dissolved in the mouth – to improve the taste of our products while reducing sugar, salt and saturated fat. For example, our groundbreaking work with the structure of sugar particles has the **potential to reduce total sugar by up to 30–40%** in our confectionery.

1966–2017

A new understanding of maternal and infant nutrition

Epigenetics is an exciting new field based on findings that some characteristics that are passed by parents to their children are the result of changes in the way genes are activated or inactivated, rather than from changes to the genetic sequence in our DNA. Our scientists at NRC have partnered with EpiGen, a global research consortium working in this field, to examine how the diet and lifestyle of pregnant women influence epigenetic changes and impact the future growth and health of their children. An additional priority in this field is to investigate **how what we eat can affect our learning and mental development** by supporting the formation of neuronal connections and their myelination, a key part of this development process.



Adult human precursor cells differentiate as neurons in culture

Nutrition care for critically ill patients

Research has shown that early enteral nutrition (EN), or tube feeding, may reduce complications and cut the length of hospital stay, yet 40–60% of patients who are eligible for early EN still don't receive it within 48 hours of intensive-care unit (ICU) admission. Studies show that providing optimum EN in ICU not only improves clinical outcomes but also **reduces the total cost of acute hospital care** by an average of CHF 2600 per patient. To address these challenges, Nestlé Health Science has combined its enteral feeding pumps, Compat Ella®, with GE Healthcare's respiratory modules and ICU patient data management system. Compat Ella® is an innovative new portable enteral feeding pump, designed in collaboration with nurses and users.

Intuitive programming helps users to get up and start feeding quickly and the informative screen messaging allows rapid problem solving. This **collaboration between companies should improve nutrition monitoring** in ICU, and raise awareness of the importance of nutrition to recovering patients.

Advancing skin health innovation

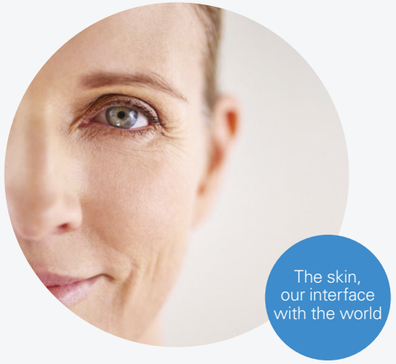
The skin, our largest organ, protects us from harmful environmental factors, acts as an envelope for the body and can influence the way we interact with the world. **Skin health has a direct impact on people's quality of life**.

We stand among those capable of inventing, developing and bringing to the market **medical treatments and consumer products** that are truly innovative. Nestlé Skin Health R&D is developing a complete range of solutions to help protect, nourish and enhance, and when needed, treat, correct and restore skin health.

We leverage and build a world-leading skin health Research and Development network that combines science and technology, and provides holistic skin health innovations. We aim to understand physicians, patients and our consumers to drive innovation, together with experts and healthcare leaders worldwide. The extent of our commitment to skin health science is reflected in the number of key dermatology publications and new patent applications filed, as well as new products year after year, by our teams of dermatology experts and scientists.

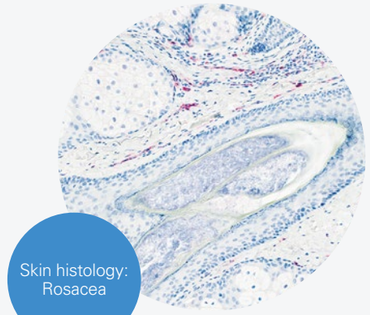
By fostering the convergence of technologies, our SHIELD (Skin Health, Investigation, Education, Longevity, Development) initiative is finding new ways to advance the future of skin health.

We are exploring the fascinating and important relationship between skin health and more general health. Furthermore, we evaluate the influence of nutritional aspects to maintain healthy skin. We are leading the way in several areas of unmet needs such as Acne, Rosacea and Atopic Dermatitis.



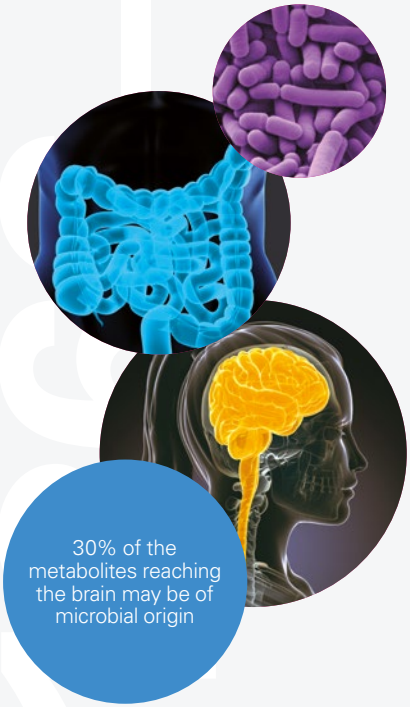
The skin, our interface with the world

Today, as people live longer, their needs and expectations are changing. We all want to look and feel good, and to play an active role in society. To do this best, our ageing skin needs to overcome the challenges of time. Recent landmark publications highlighted **skin health as a key component to enabling healthy active ageing**.



Skin histology: Rosacea

2016–2017



Getting to know the bacteria in your gut to help your brain

Interesting things happen at the interface between disciplines, and Nestlé Research is ideally positioned by leveraging the breadth of our portfolio. Astounding as it sounds, 1–3% of our total body mass consists of trillions of microbes! They live in the gastrointestinal tract, in different body cavities and on the skin, and make up what is known as the human microbiome.

By understanding their role, we may be able to treat chronic conditions such as Inflammatory Bowel Disease (IBD) and Clostridium difficile infections. That's why we're working together with Imperial College to develop a new class of biologicals to treat diseases by restoring microbiome function.

Exciting new research has also begun to reveal the connections between the gut microbiome and the brain, showing how it influences mood, well-being, and even brain development.

Brain Health at all ages

Success in science requires focus and priorities, and Brain Health is one of them for Nestlé Research. Through Vitaflo, a fully owned subsidiary of Nestlé Health Science, Nestlé has developed Medium Chain Triglycerides that can help children suffering from refractory epilepsy to better control seizures. Epilepsy is a condition that today requires a very stringent fat-based diet.

To develop even better solutions, the Nestlé Institute of Health Sciences investigates the role of mitochondria, the countless microscopic energy factories that we have in all our cells.

Exploring the link between gut and skin

Nestlé scientists are working to understand the links between our gut and skin microbiome and the impact it has on conditions like Atopic Dermatitis. There is no doubt that nutrition can influence skin health, and evidence is emerging that skin impairment can link to food allergy too.

We are leaders in Atopic Dermatitis and Acne, two major unmet medical needs and we're researching solutions for a longer and more robust life course of healthy skin by looking at the microbiome as a connecting point for the brain/gut/skin nexus. We expect findings that may have a positive impact on overall quality of life as we age.

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Nestlé Nutrition
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Nestlé Product Technology Centre Ice Cream
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