

Food Specialties

BRIGHT SCIENCE. BRIGHTER LIVING.™



Safe harbor statement

- This factbook may contain forward-looking statements with respect to DSM's future (financial) performance and position. Such statements are based on current expectations, estimates and projections of DSM and information currently available to the company. DSM cautions readers that such statements involve certain risks and uncertainties that are difficult to predict and therefore it should be understood that many factors can cause actual performance and position to differ materially from these statements. DSM has no obligation to update the statements contained in this factbook, unless required by law
- A more comprehensive discussion of the risk factors affecting DSM's business can be found in the company's latest Annual Report, which can be found on the company's corporate website, www.dsm.com

Food Specialties

We believe food should be healthier, tastier, and more sustainable

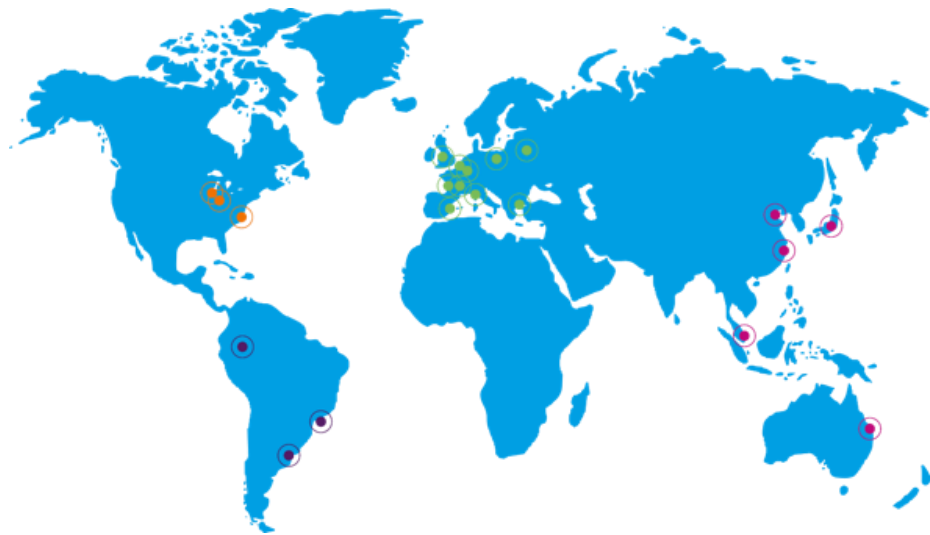
- DSM Food Specialties is a leading global supplier of food enzymes, cultures, bio-preservation, hydrocolloids, taste and health ingredients as well as agents as catalyst for biochemical process
- DSM helps make existing diets healthier and more sustainable, giving increasing numbers of people access to affordable, quality food – ‘enabling better food for everyone’ - driven by:
 - **Health & Wellbeing** - Sugar, salt, fat reduction without compromise on taste & mouthfeel
 - **Taste Experience & Indulgence**
 - **Understandable & Clean Labels** - Strong consumer demand for ‘kitchen cabinet’ ingredients, removal of undesired chemicals, clean and clear labels
 - **Production Efficiency & Sustainability** - Rapidly growing world population, food production more than 8 times more efficient since 1940
 - **Shelf Life Extension & Food Waste Reduction**
- Customer proximity and the ability to deliver highly tailored products are the basis for our continuously expanding portfolio of innovative fermentation-based product solutions



Food specialties - Innovation powered by leadership in biotechnology

Food Specialties – Global R&D support

We support your innovation & production process — wherever you are based



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1.2 patents per million
€ R&D (industry standard: 0.6)

150 years experience in
fermentation technology
combining expertise in yeasts,
cultures *and* enzymes

Biotechnological Sciences



Analytical Sciences



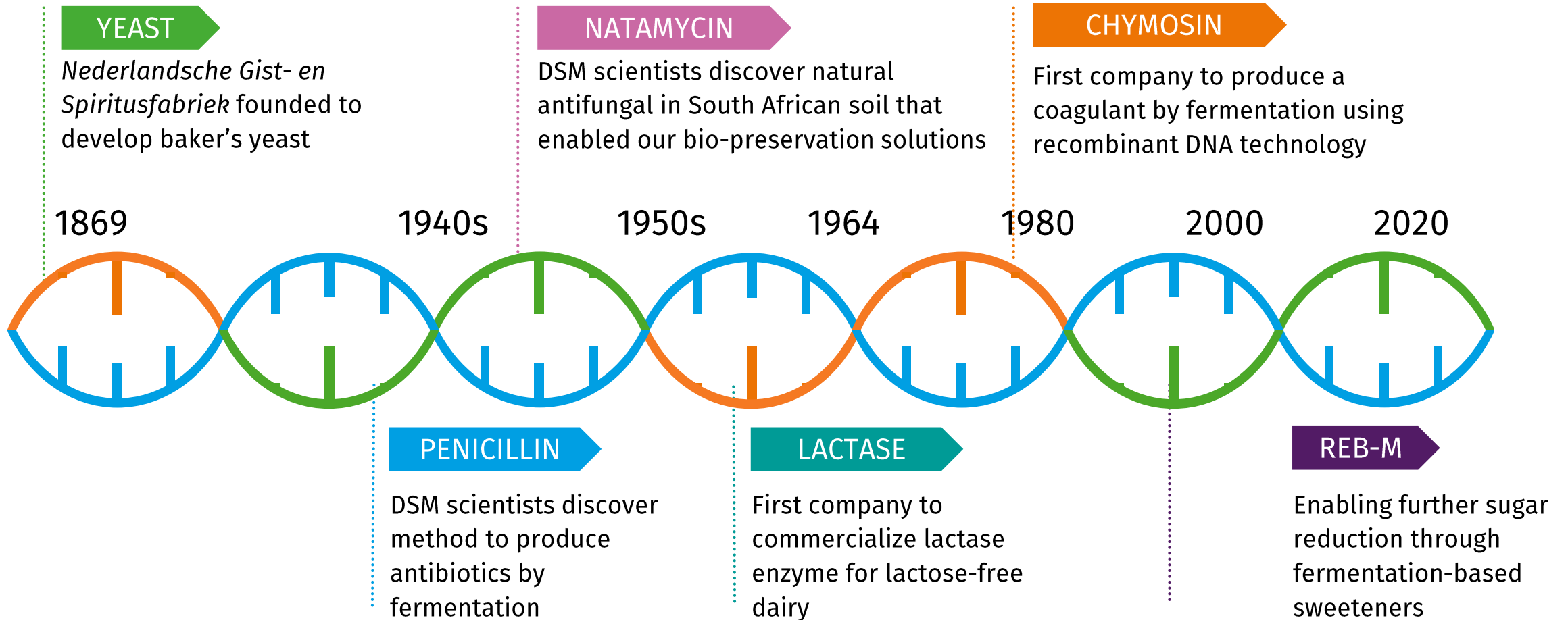
First-class in finding, making and applying microbial and enzymatic solutions

R&D and Innovation capabilities dedicated to Food and Beverage industry

Global external & internal network of biotech specialists

Working with DSM is working with a food industry pioneer

Today's technology & expertise goes 150 years back to 1869



... expertise to help food manufacturers innovate

- DSM's **application experts** have already developed thousands of innovations and reformulations and can help its customers **get to market quick**, with the products consumers will love
- Whether **process efficiency**, **innovation**, added **health benefits**, **taste & texture** solutions or **extending shelf life**? DSM's application experts will work with its customers to find the right solution for their needs
- Working with customers on innovation projects is what we do best, where ever you are based, with our **global science & innovation** and **regional food application centers** at our customer's service!
- There is no discipline better placed to enhance quality of life and respond to society's great challenges than **biotechnology**. With DSM's advanced technology and know-how, DSM can create solutions relevant to **population growth**, **resource constraints**, **food security**, **climate change** and **energy concerns** – and doing it in a **sustainable way**, creating **brighter lives for people today and generations to come**



Quality



Reliability



Traceability



Sustainability



Product Portfolio food ingredients

Broadest portfolio in application based formulations

Enzymes & Cultures



Enzymes and cultures enhance taste, texture or act as processing aids functioning as a catalyst for biochemical reactions

Savory –Yeast extracts



Savory taste solutions – Extracts and process **flavors** to enhance taste while reducing salt in snacks, ready-meals, sauces, soups and meat

Bio-preservation



Biopreservatives – are solutions to naturally extend shelf life of food

Textures



Hydrocolloids - are thickeners and stabilizers that dissolve, disperse or swell in water to provide a broad range of critical functionalities and physical attributes, including gelling, texture, mouthfeel, viscosity, suspension and emulsification

Food Specialties addressing 4 key markets



Dairy - DSM can help shape your dairy with our cultures, enzymes, cheese ripening & (bio)preservation solutions and residual antibiotic milk tests to produce cheese, fermented milk products and (lactose-free) milk



Baking - DSM offers baking enzymes, preservation systems and ingredient solutions for baked goods with less salt, acrylamide, additives and emulsifiers and gluten-free bread. DSM has deeply invested in research to help improve your baking



Beverage - DSM offers specialty enzymes, taste modulation and bio preservation ingredients for beverage producers



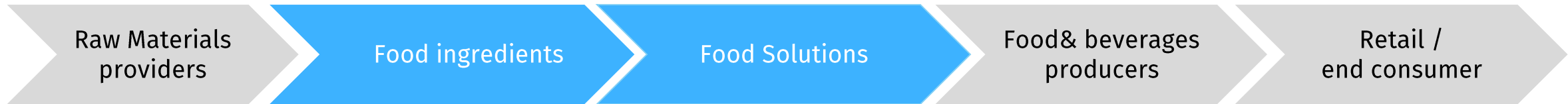
Flavors/Savory - DSM produces savory taste solutions for a wide range of applications such as soups and bouillons, noodles, snacks and sauces, ready meals, meat and meat analogues. DSM's portfolio offers savory ingredients and solutions that are natural, kosher and halal certified



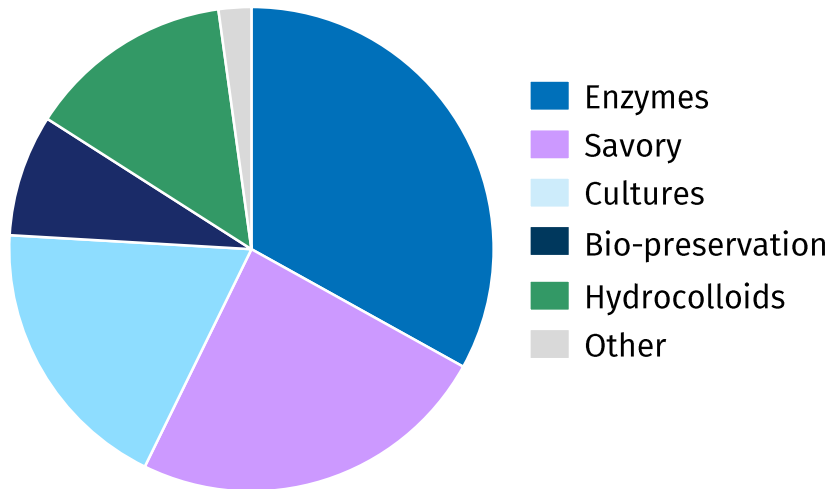
Food Specialties: Enabling better food for everyone

€0.5bn* sales (2018) diversified across applications, geographies, channel and a complete portfolio

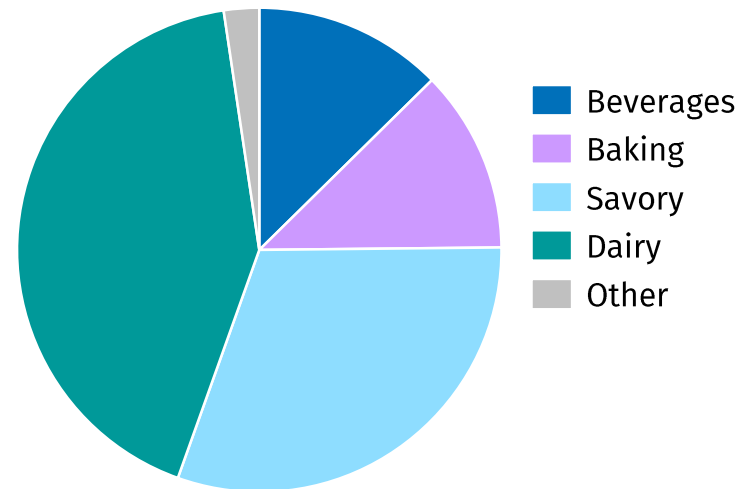
Food value chain



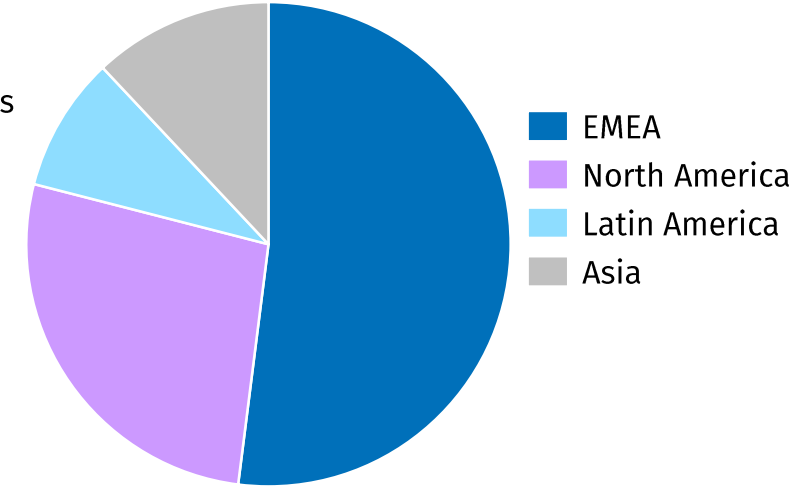
2018 Food Specialties Sales* related to ingredient (%)



2018 Food Specialties Sales* by application landscape (%)



2018 Food Specialties Sales* by region (%)



2018 reported sales of €0.5bn was excluding 2018 Andre Pectin; in the graphs per ingredient, application and region, the proforma Andre Pectin sales has been included

Food Specialties | value chain

Food additive manufacturers
€40bn

- Enzymes
- Antioxidants
- Hydrocolloids
- Colors
- Cultures
- Flavors
- Textures



Commodities
€800bn

- Dairy
- Fruits
- Cereals
- Proteins
- Meat/ fish
- Oils
- Spices
- Flour
- Salt
- Sugar



F&B manufacturers
€2,130bn



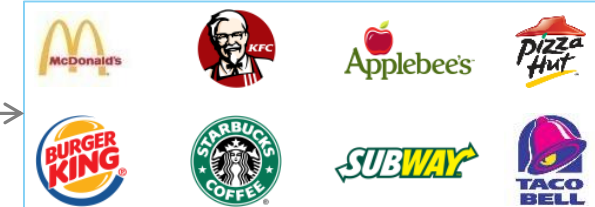
Retail brands
€2,740bn



Store brands
€315bn



Food service
€2,430bn



Consumers: >€5,485bn (excl. unprocessed foods)

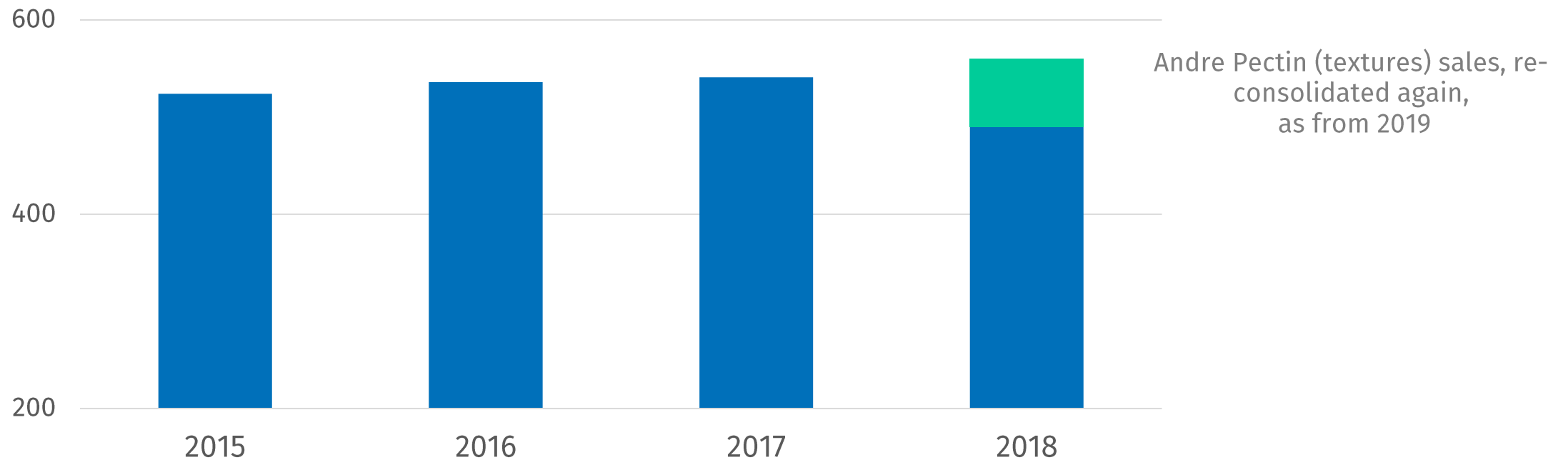
Playing a pivotal role in the value chain offering healthier solutions that enhance taste and texture

Total specialty food ingredients market, excluding ~€25bn of commodity ingredients, e.g., soy proteins

Food Specialties sales development: 2018 sales €0.55bn* (incl. Andre Pectin proforma)

Andre Pectin deconsolidated in 2018 but re-consolidated in 2019

Sales (€ million)



Key food consumer & industry trends, driving above-market growth

Market Growth		Create value through market-driven innovation and focus on high growth segments					DSM Growth	
Savory	3-4%		Health & Wellbeing Sugar-Salt-Fat reduction	Taste Experience & Indulgence	Production Efficiency & Sustainability	Shelf Life Extension & Food Waste Reduction	Understandable & Clean Labels	4-5%
Enzymes & Cultures	5-6%		6-7%					
Hydrocolloids	3-4%		7-8%					
Bio-preservation	4%		5%					
Non-artificial Sweeteners	>10%		>10%					
Total	~4%		Driving above market growth					~5%

Sustainable sweeteners through fermentation – Avansya

EverSweet™ - the next generation of great-tasting Stevia Sweeteners

- Consumer interest and awareness on ways to improve their health has also increased the demand for “healthier foods” with reduced fat, sugar and salt. Main objective is to reduce overall calorie intake, yet not to compromise on taste
- To meet this demand, Cargill and DSM combined their efforts to create the joint venture Avansya, to deliver zero-calorie great tasting sweeteners to the market.
- This partnership combines DSM’s leading biotech know-how and fermentation expertise with Cargill’s global commercial footprint in sweeteners and large-scale fermentation capacity, making sugar reduction a sustainable and affordable reality.
- Avansya offers a more scalable, more sustainable and low cost-in-use, zero-calorie solution
- Avansya (JV with Cargill) launched in March 2019. Commercial production started in Blair (Nebraska, US) end of 2019. Avansya has commercial volumes available and is already supplying EverSweet to various customers. Further consumer products will launch in the coming months across multiple market segments. Total market for fermentative high-intensity sweeteners is forecasted to be >€3bn by 2025



Solutions for delicious yogurts

- DSM offers perfect taste and texture solutions for stirred, drinkable or set yogurts, plain or with flavor, with or without probiotics, lactose-free, low-in fat, high in protein or sugar-reduced
 - **Delvo®Fresh**, high quality cultures for indulgent fermented milk products
 - **Delvo®Pro**, high quality and cost-effective probiotic strains
 - **Maxilact®**, leading lactase enzymes for lactose-free and sugar-reduced dairy
 - **Delvo®Guard**, protective cultures to extend shelf life



PreventASe®

Preventing acrylamide formation with PreventASe®

- PreventASe® helps snack and cookie producers comply with and stay ahead of acrylamide regulation
- PreventASe® prevents the formation of unhealthy acrylamide levels in baked goods



- In the final application, it reduces acrylamide levels
- by up to 95% with no impact on taste or texture



Meat analogues toolbox:

Create a delicious meat taste without meat

- Our easy to use toolbox contains all the right savory ingredients to create a delicious meat taste
- From taste enhancement and specific taste directions to salt reduction with uncompromised taste

The products in our toolbox

- | | |
|-------------------|------------------------|
| ✓ Maxavor® YE | ✓ Maxarome Pure/Select |
| ✓ Maxavor® YE Key | ✓ Gistex |
| ✓ Maxagusto | |





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