

# Food & Beverage

Factbook for Investors  
April 2022

HEALTH · NUTRITION · BIOSCIENCE





# Food & Beverage

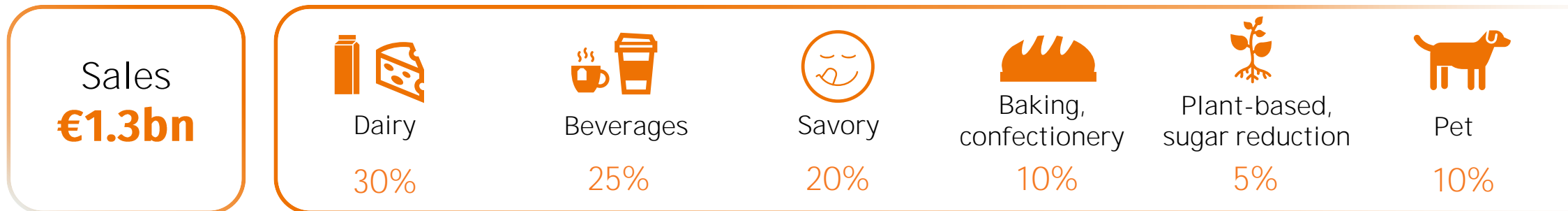
We believe food should be delicious, nutritious, *and* sustainable

- **DSM's newly created F&B 'powerhouse' unit brings together our full range of ingredients, expertise and bioscience solutions for taste, texture and health. We help food & beverage producers satisfy the unique tastes and nutritional needs of consumers, while simultaneously reducing both demands on the planet's finite natural resources and the industry's carbon footprint**
- DSM is a leading global supplier of food enzymes, cultures, bio-protection, hydrocolloids, taste, and health ingredients, as well as specialty proteins and sugar reduction solutions
- **DSM's expertise in support of customers covers application development, consumer insights, nutritional science & advocacy, bioscience innovation, optimized production, and regulatory & quality management**
- DSM helps make diets healthier and more sustainable, giving increasing numbers of people access to affordable, quality food, with solutions for:
  - Taste and texture
  - Enhancing nutritional profiles
  - Reducing fat, sugar and salt
  - Premixes
  - Clean & organic labelling
  - Protein diversification
  - Improving efficiencies and reducing food loss & waste
- Powered by customer proximity and the ability to deliver products fully tailored to local market needs, DSM in food & beverage strives to achieve a world where **customers and consumers don't have to choose between taste, texture and health.** They can enjoy it all



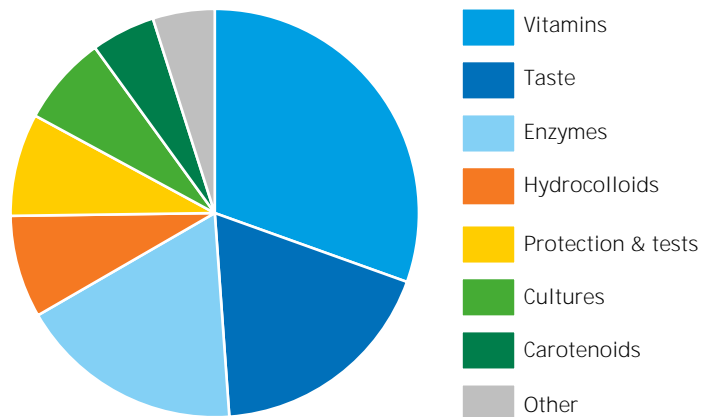
# Food & Beverage

We believe food should be delicious, nutritious and sustainable



DSM offers a broad range  
of ingredients ...

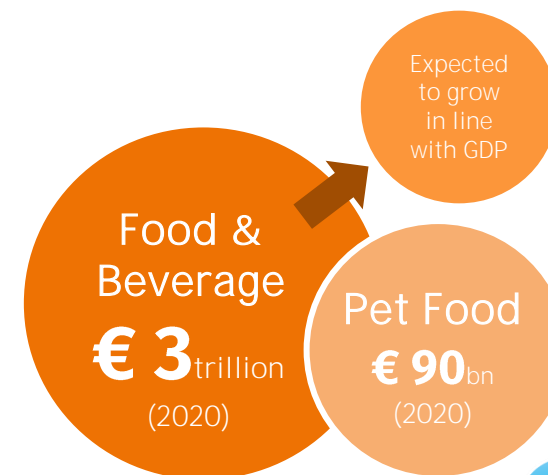
Split by ingredient category



... holding a strong  
market position ...

- Strong bioscience competences
- Top 3 player in Food Enzymes and Cultures
- Market leader in food premixes
- Integrated solutions supply capabilities

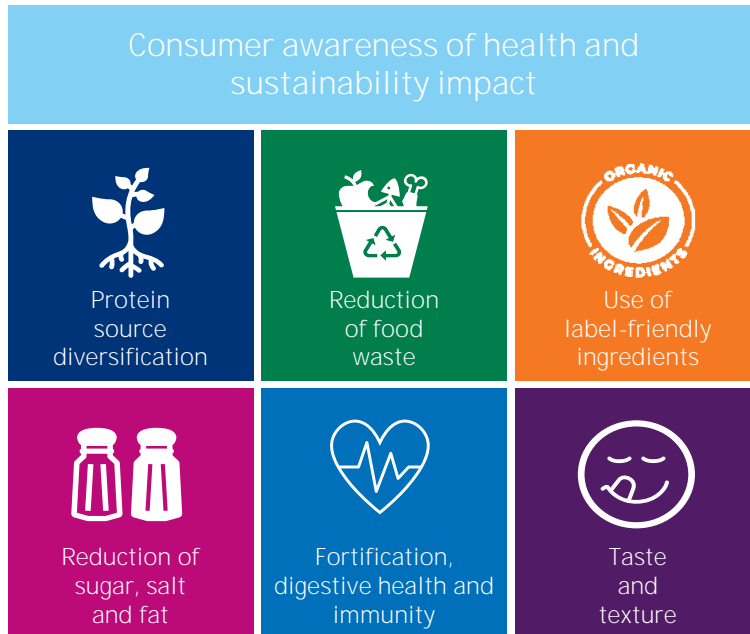
... in attractive markets



# The opportunity for F&B

Uniquely positioned to serve a growing global population with healthy nutrition, the preferred taste and texture, and sustainably produced

## Key trends



## Offering new opportunities ...

F&B companies seek new product solutions for tasty and at the same time healthier and sustainable products with fast time to market

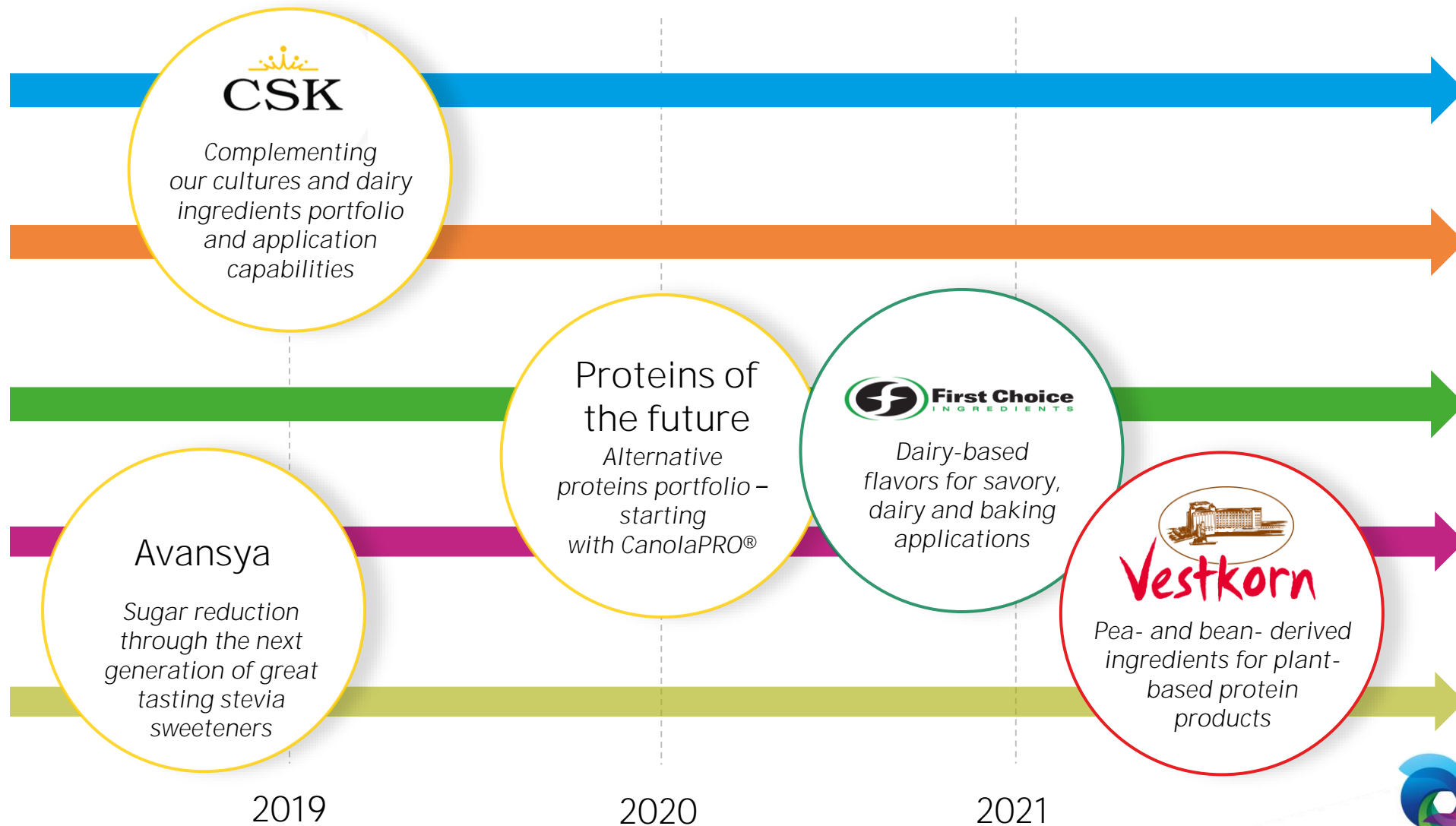
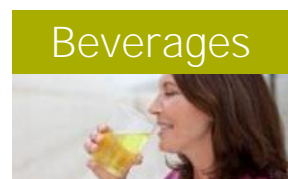
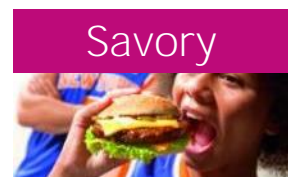
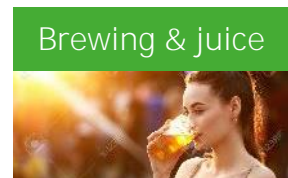
New innovative companies disrupting the market, e.g. with plant-based meat and dairy alternatives, seeking development partners that can supply integrated solutions

## ... for which DSM is uniquely positioned

- Ability to partner with customers to develop healthier products with the right taste and texture through integrated solutions
- Based on a broad ingredient portfolio for taste, texture and health, including new innovations such as EVERSWEET® sweetener and CanolaPRO®.
- Fueled by strong expertise in nutrition, F&B application, bioscience, sustainability



# Our segment led organization has been strengthened with innovation-driven growth platforms and acquisitions

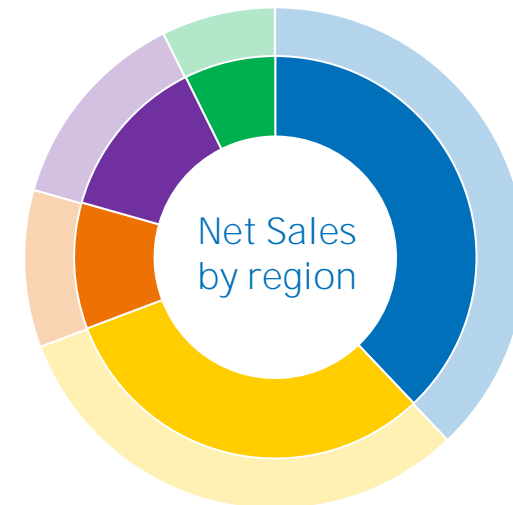




# Broad global presence is a strong enabler of our growth



**Delft Global Headquarters**  
With a long history in bioscience Delft has become the world hub for F&B innovation



- EMEA (38%)
- North America (31%)
- Latin America (10%)
- APAC (13%)
- China (7%)

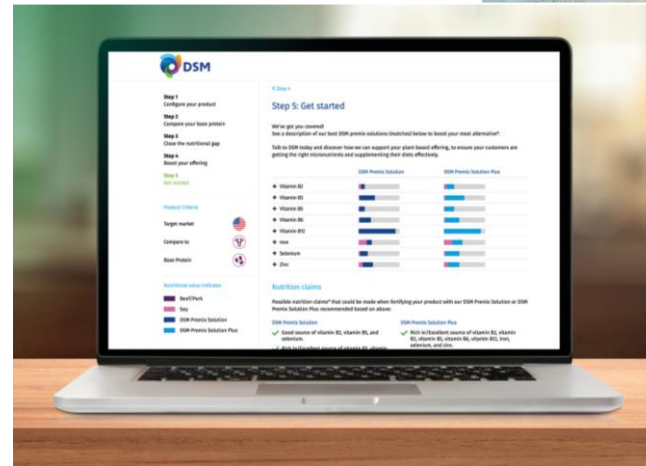


# DSM brings together taste, texture and health in sustainable solutions for our customers



Supported by nutritional expertise,

e.g., the digital Fortifull™ Nutrition Guide for plant based foods



Integrated solutions to address taste, texture and health

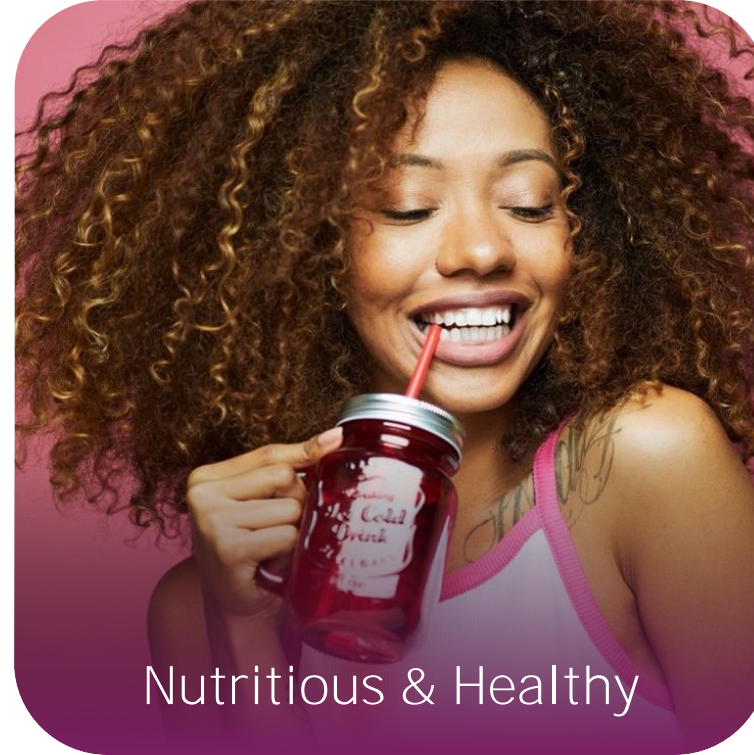
e.g., in plant based foods

# DSM's products are addressing societal food challenges



Delicious & Appealing

Consumer preference starts with appealing taste, texture, & appearance



Nutritious & Healthy

Dietary choices impact health and personal well-being



Sustainable

Affordable, high-quality food for the global population while decreasing pressure on natural resources





# With our broad portfolio of products we deliver value added solutions



## Taste

- Cultures
- Enzymes
- Sweeteners
- Yeast extracts
- Process flavors
- Dairy-based flavors (FCI)



## Texture

- Bio-gums
- Cultures
- Enzymes
- Pectin
- Specialty Proteins



## Health

- Carotenoids
- Enzymes
- Nutraceuticals
- Lipids
- Specialty Proteins
- Probiotics
- Sweeteners
- Vitamins



## Process and Preservation

- Antioxidants
- Bioprotection
- Coatings
- Cultures
- Enzymes
- Milk antibiotic residue testing

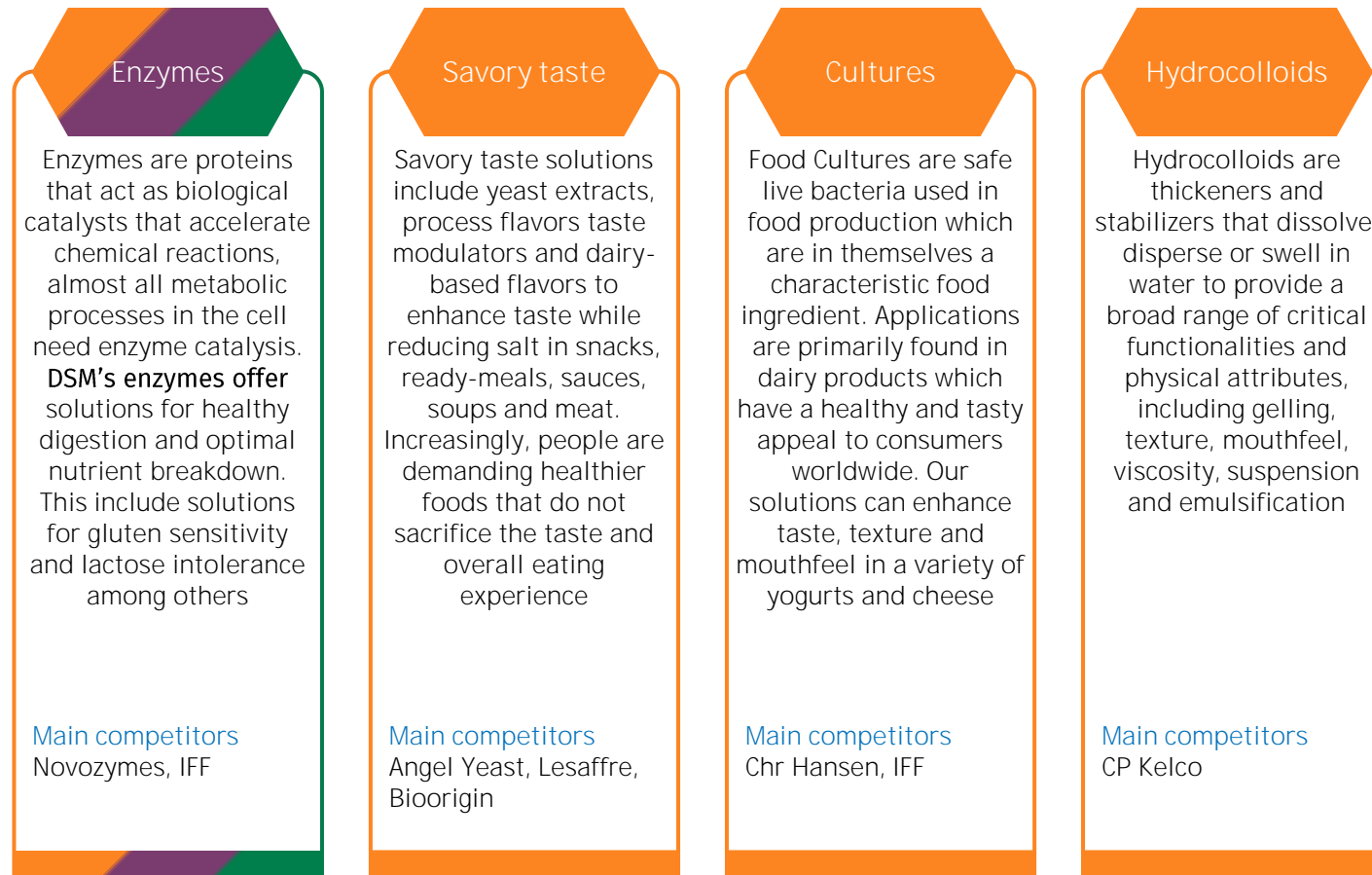
Food  
Challenges

● Delicious and appealing

● Nutritious and healthy

● Sustainable

# DSM has a broad portfolio of products



## Food Challenges

- Delicious and appealing
- Nutritious and healthy
- Sustainable

# DSM has a broad portfolio of products

### Vitamins

We have an extensive portfolio of fat-soluble and water-soluble vitamins. Whether as straight or in a customized premix our vitamins are of the highest quality. Vitamins are crucial for every life stage and form the essence of human health. Therapeutic uses of vitamins cover wide range of medical **conditions**. DSM's portfolio includes all vitamins from A to Z

**Main competitors**  
BASF, NHU, ZMC

### Carotenoids

Carotenoids are valuable pigments that can act as vitamin A precursors. Certain carotenoids work as antioxidants in the body protecting against free radicals which can contribute to the development of cancer, heart disease and eye diseases. We produce high-value natural beta carotene derived from fermentation of the *Blakeslea trispora*.

**Main competitors**  
BASF, NHU, ZMC, Divis

### Specialty Proteins

The market for plant-based, vegetarian and vegan options is booming. Our specialty proteins include pea and bean derived ingredients, and canola seed oil extraction transformed by cold pressing into a valuable food protein. We combine these specialty proteins with our portfolio of products to offer Integrated solutions to address taste, texture and health for plant-based foods

### Lipids

Our MEG-3 fish oils meet or exceed worldwide government regulations and guidelines for contaminants, offering safe, high-quality omega-3s EPA and DHA. Our algal oils are produced from start to finish in a controlled environment, and provide a natural, sustainable and vegetarian alternative to fish oil.

**Main competitors**  
BASF, Golden Omega, Polaris

### Protection & tests

Biopreservatives and antioxidants are solutions to reduce food waste by naturally extending shelf life of food without the use of artificial preservative or having a negative impact on flavor

DSM has also developed tests to guarantee the quality of the food we consume. An example of this is Delvotest®, designed to optimize antibiotic residue detection in milk

## Food Challenges

- Delicious and appealing
- Nutritious and healthy
- Sustainable





# Offering a large toolbox of innovative solutions



### Food Challenges

- Delicious and appealing
- Nutritious and healthy
- Sustainable

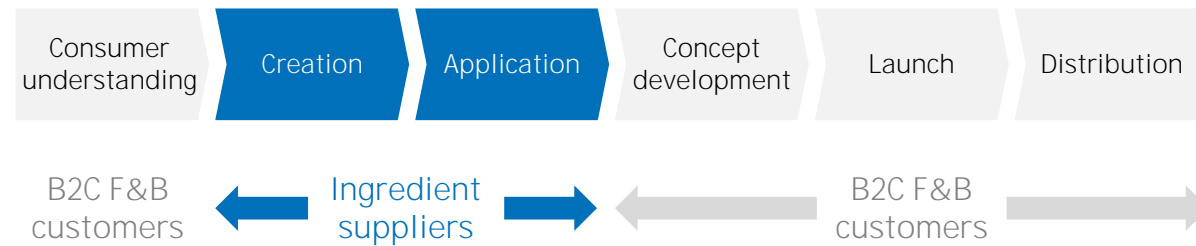


# DSM is evolving into a fully integrated solutions provider

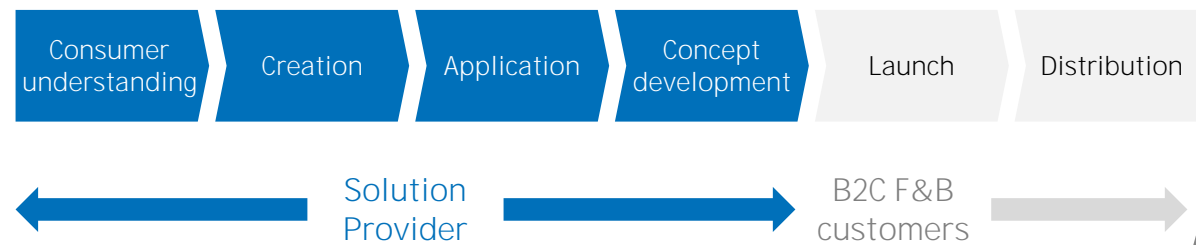
F&B customer requirements are changing towards integrated solutions

Food ingredient suppliers require a broad portfolio, application capabilities, technologies and route-to-market

Former/Current Customer Requirements



Future Customer Requirements



- The F&B industry drives innovation in-house with suppliers playing a facilitation role

- F&B customers will outsource more and demand integrated solutions which require a broader portfolio from ingredient companies
- Ingredient suppliers will be more involved in the innovation process, and need strong capabilities which are backed by a technology focus
- Ingredient suppliers with strong access to F&B customers will typically be the first point of approach for providing integrated solutions



# DSM operates in all stages developing integrated solutions

From process expert to full concept developer

Integrated solution provider

## Customer Process Expert



Example: **Brewing enzymes**

- Fully understand the customer's brewing process & partner with customer to finetune
- Focus on process efficiency without compromising final product quality

## Premix, Blends (supply chain expert)



Example: **F&B premixes**

- Blend nutritional, functional ingredients into one premix
- Purchasing, supply chain efficiencies for customers

## Application Expert



Example: **Toolbox for texture**

- In-depth knowledge of application of enzymes in baked goods like tortilla - able to improve freshness, rollability and to prevent shrink

## Product Concept Expert



Example: **Cross-nutrition dairy**

- Translation of functional and health benefits into a final product combining lactase, cultures, probiotics, bioprotective cultures
- Can be tested directly with brand owners



# Serving key consumer goods customers across the world

## Dairy, Baking, Brewing (DBB)



~35% of sales through distributors

## Savory



~30% of sales through distributors

## Beverages & More

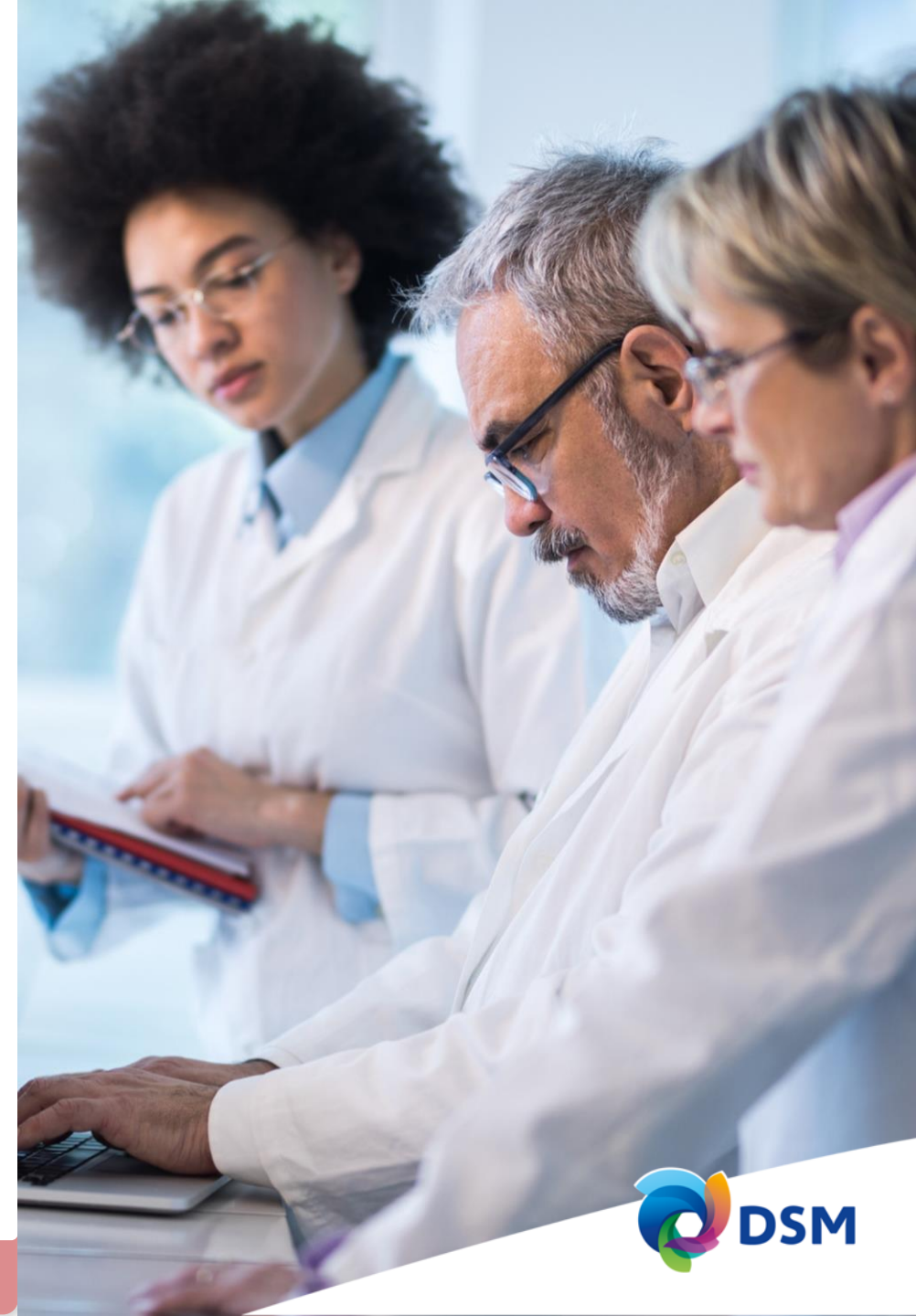


~20% of sales through distributors

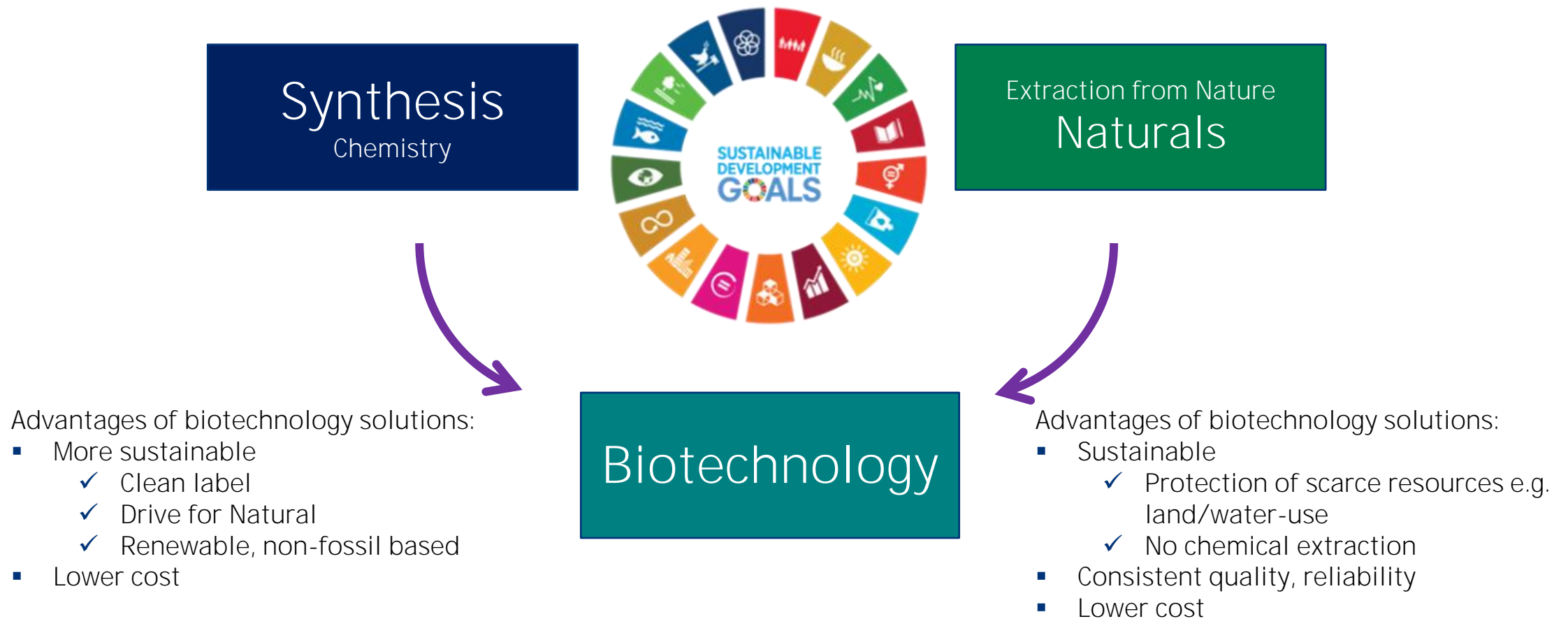
# Leading in biotechnology

## Putting microorganisms at work to solve societal food challenges

- **Leading in fermentation and biotech** for over 150 years. We apply fermentation, which involves the use of microorganisms like yeast, fungi, and bacteria to develop products and solutions. This allows us to feed a growing population more sustainably, while reducing food loss and waste, fighting climate change, avoiding natural resource depletion and preserving biodiversity
- **Fermentation at industrial scale** results in better and more consistent quality **and safety. It enables the development of products including baker's yeast, savory yeast extracts, and dairy cultures** for the production of cheese and fermented milk products
- **World-class talent and facilities** organized in a global network of 1,250 scientists and experts worldwide at R&D and manufacturing facilities in Europe, China, Brazil and the USA
- **Investment in emerging technologies.** Exiting new possibilities are opening up in bioscience. DSM is investing in emerging technologies such as robotization, digital twins (a virtual mirror of a real-world product or process), and AI
- Reference: [DSM, a world leader in biotechnology](#)



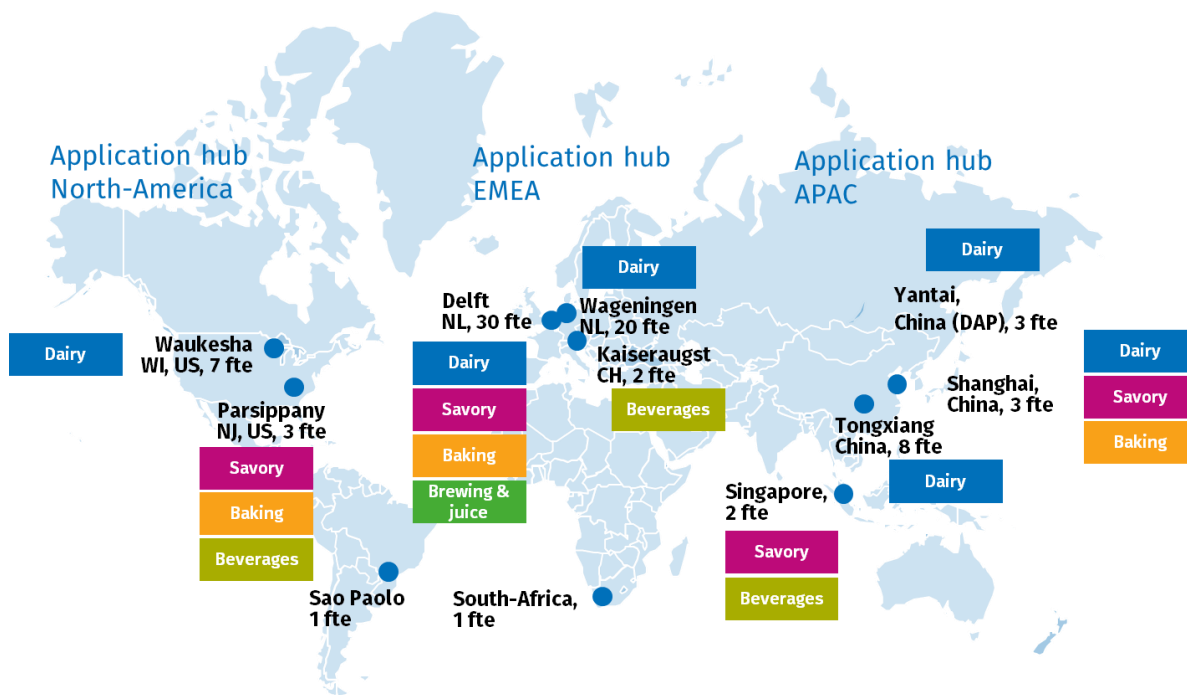
# Biotechnology is key to address the grand challenges of growing global population





# DSM has a global network of R&D and Application capabilities across regions and segments

DSM F&B Application  
90 FTE



DSM F&B R&D  
210 FTE

Center for Biotech Innovation (BPI-CBI)	~40 FTE
Center for Food Innovation (F&B-CFI)	~120 FTE
Center for Digital Innovation (BD&T-CDI)	~10 FTE
Center for Analytical Innovation (BD&T-CAI)	~40 FTE

# Covering a full range of biotechnology competences

Enabling us to identify and develop new molecules, applications, and processes



## Screening

Developments in biotechnology often rely on screening and selecting suitable high-performance microorganisms. These can be screened from microbial culture collections, classical mutagenesis, and evolution experiments or strain improvement programs. Automation and miniaturization are increasingly important to further optimize this process.



## Strain development

Our scientists carry out strain development to make the selected organism fit for use, using classical (non-genetic modification) breeding tools as well as the latest genetic modification technologies.



## Bioprocess development

Bioprocess development deals with bringing biotechnology innovations to factories. Upstream bioprocessing involves selecting feedstocks and cultivating microorganisms to manufacture bioproducts in large stainless-steel vessels. Subsequent downstream processing is applied to secure good bioproduct yield and quality after purification and formulation within required specifications.



## Biochemistry and microbiology

Biochemistry and microbiology provide insight into how enzymes and microbes function on a molecular level. Together with our food application science, they enable the application of bioproducts such as enzymes and microbes. Moreover, insights in microbial populations, so called microbiomes, in gut and on skin are applied for developing novel applications.



## Bioinformatics and modeling

**DSM's bioinformatics and modeling team** supports the development of our strains, processes and applications. They draw on a wide range of scientific and technological specialisms, including DNA and genomics data interpretation, advanced computational models, and smart protein and pathway design methods.



## Analysis

With our advanced analytical technologies, we generate insights to steer strain, process, application, and product development as an important facilitator of our biotechnology **innovation cycles**. **DSM's** biotechnology R&D teams leverage state-of-the-art analytical solutions, such as nuclear magnetic resonance (NMR) and mass spectroscopy, for screening and generating in-depth biological insights.

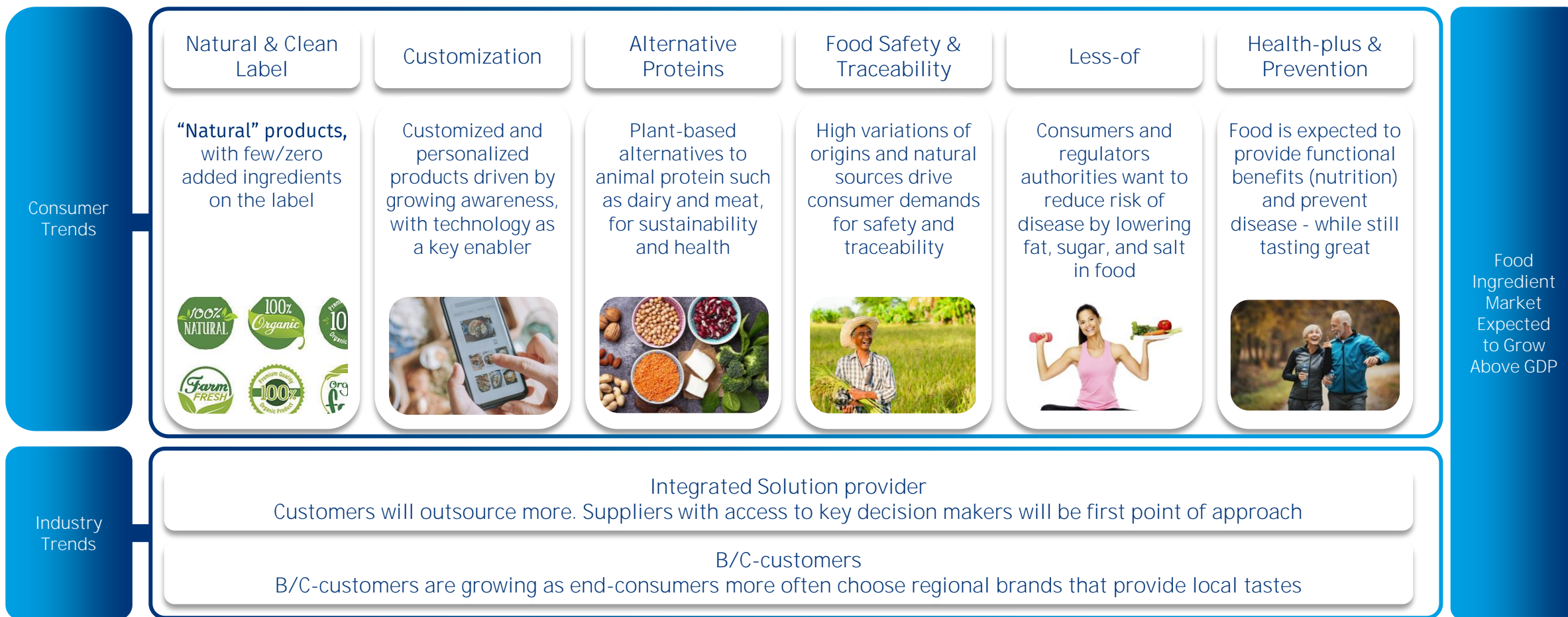


## Data science

The principles of Findable, Accessible, Interoperable, and Reusable (FAIR) data and knowledge management are secured within the company as they are key to the success of our innovation programs. Extensive data and knowledge mining, including AI and machine learning, are applied to steer experimentation and generate insights.

# Key food consumer & industry trends drive the market

Demand for natural, healthy and functional food production is growing and F&B customers increasingly demand integrated solutions



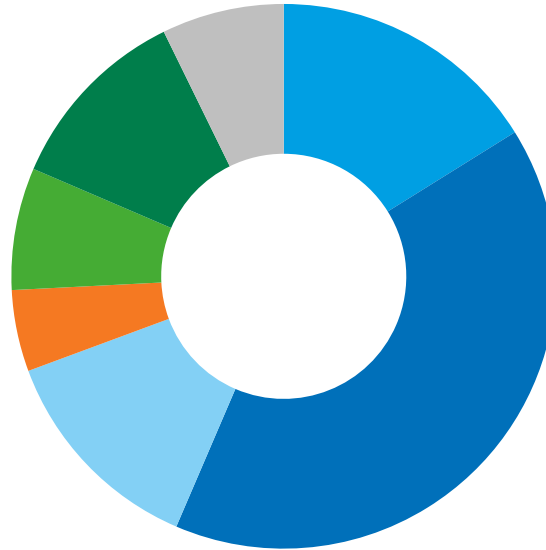


# Active in all segments of the large and growing food ingredient market

DSM Sales  
€1.3 billion, MSD growth



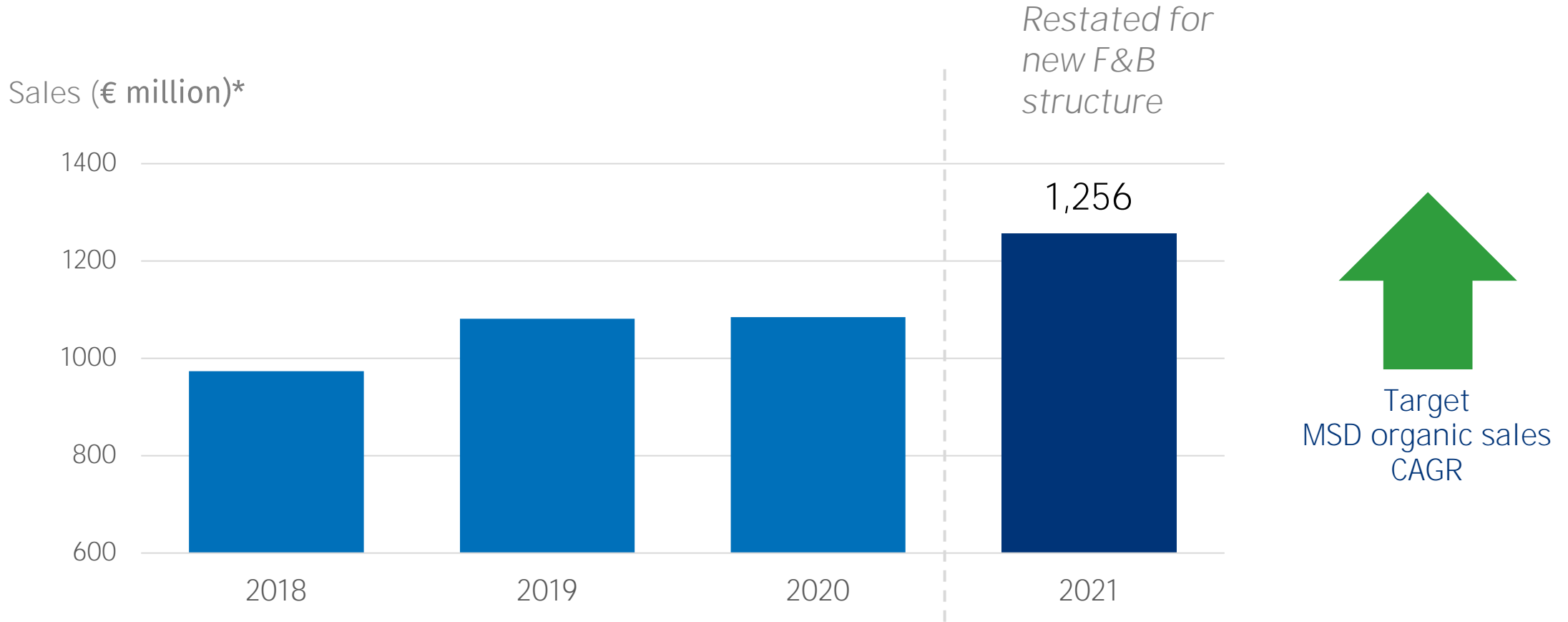
F&B Ingredient Market Served by DSM  
€36 billion



- Vitamins
- Taste
- Enzymes
- Hydrocolloids
- Protection & tests
- Cultures
- Carotenoids
- Other

\*The full market of ingredients categories that DSM F&B plays in is €36 billion. Our addressable market is about €12 billion of which we have a 10% market share

# Strong sales growth



\*Estimate based on net sales by end-use market for 2018-2020. Sales for 2021 include acquisitions.



# CSK

## Strengthening our product portfolio for semi-hard cheeses

- In November 2019 DSM acquired 100% interest in CSK Food Enrichment C.V. for **€150 million**
- With the acquisition of CSK, DSM further strengthened its product portfolio and application know-how and expertise in food & beverage, in particular in the complementary area of taste, texture and bio-preservation solutions for semi-hard cheeses such as Dutch heritage cheeses Gouda and Edam
- The transaction added the state-of-the-art dairy application center in the heart of Food Valley, Wageningen (NL) and the high-tech fermentation facility in **Leeuwarden (NL) into DSM's global manufacturing network. Providing additional production capacity for a range of products in the strategically important European region**





# First Choice Ingredients

Leading position in dairy-based savory flavorings for an expanding market in dairy alternatives

- In September 2021 DSM acquired First Choice Ingredients, a leading supplier of dairy-based savory flavorings for an enterprise value of US\$453 million
- With headquarters in Germantown (WI, USA) and three manufacturing facilities in the vicinity, First Choice Ingredients and its approximately 100 employees have built a leading position in the US taste market
- The company ferments and blends a variety of natural dairy products with cultures and enzymes to create clean label taste solutions integrating sensory and functional benefits. It leverages its R&D and application expertise to work as an innovation partner with food producers, flavor houses and food service suppliers in applications such as soups, snacks, salad dressings and sauces, prepared meals, sweet baking, as well as dairy products and plant-based meat and dairy alternatives
- This acquisition is highly synergetic. DSM can further accelerate growth by offering the FCI products outside the US to DSM's broad global customer base and integrate FCI solutions in DSM's full offering for F&B customers



# Vestkorn

## Well-positioned in the buoyant alternative protein market

- In November 2021 DSM acquired Vestkorn **Milling, one of Europe's leading** producers of pea and bean derived ingredients used in a wide range of food & beverage applications, for an enterprise value of **€65 million. The company has 55 employees** and is based in Tau on the south-west coast of Norway
- Vestkorn Milling is well-positioned in the buoyant specialty plant protein market, supplying proteins, starches and dietary fibers for plant-based foods, pet food, and animal feed
- The addition of **Vestkorn's** portfolio of high-quality, allergen-free textured vegetable proteins (TVP) as well as functional protein isolates means that DSM is able to significantly increase the relevance and value of its integrated solutions offering for producers of plant-based alternative protein products, providing both the macronutrient in the form of the TVP base as well as a full range of ingredients and expertise to fine-tune the taste, texture and health characteristics of the end-product, including support for differentiating front of pack claims
- **The acquisition is a further step in DSM's strategy to build an alternative protein business and will provide synergy with DSM's innovative CanolaPRO®.** It will also help DSM achieve its Food System Commitment of reaching at least 150 million people with its ingredients and solutions for delicious, nutritious and sustainable plant-based food & beverage products by 2030





# EVERSWEET®

## Sustainable and healthy, 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 bioscience 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
- Reduced and zero-sugar consumer end-products incorporating EVERSWEET® were successfully launched by customers across our target segments in 2021, with further product development projects initiated. Meanwhile, EVERSWEET® has been approved for use in additional markets in the Americas and Asia-Pacific, with further registrations in the European Union and elsewhere also underway





# Solutions for delicious dairy products

## Offering perfect taste and texture solutions for yogurts

### Maxilact®

- Maxilact® is a family of acidic and neutral lactase enzymes that allow lactose-free and sugar-reduced dairy without compromising on taste, mouthfeel, or texture
- Additionally, the natural sweetness it unlocks enables up to 20% sugar reduction in dairy products

### Delvo®Pro

- Delvo®Pro is a family of probiotic strains for a range of dairy application. Keeping immune-boosting bacteria alive across long product lifetimes, without compromising taste or mouthfeel
- Probiotic products are an increasingly popular choice among health-savvy shoppers. So, whether in fermented milk products or either drinkable or stirred yogurts, probiotic strains must reliably uphold stability throughout their shelf life. In addition, these strains must offer good taste and maximize operational profitability



# Protein source diversification

## Enabling a range of superior plant-based foods

### Maxarome® Select

- Maxarome® Select is a unique yeast extract with a range of applications, including the delivery of an authentic meaty taste at reduced salt levels
- Enhancing quality perception in products including potato chips, dressings, low-fat cheeses, snacks, meaty products, and soups
- Playing an important part in new applications. Allowing producers of plant-based meat alternatives to mask undesirable off-notes that can be imparted by the protein base and deliver an authentic meaty taste

### CanolaPRO®

- The inedible by-product of canola seed oil extraction transformed by cold pressing into a valuable food protein extract for food and beverages. Complete protein with high nutritional value, balanced taste profile, functional properties, including high solubility
- Joint venture by DSM and Avril, building a factory in Dieppe (France). CanolaPRO® will be commercially available from 2022





# Dairy concepts #STAYSTRONG

## Example

Meeting consumers' needs for immune health

Lactose-free  
0% added sugar  
8% Protein

- Supports the immune system
- Unlocking the natural sweetness, with ZERO added sugar
- Digestion-friendly, even for lactose intolerant consumers



### DSM INGREDIENTS

- QUALI® Vitamin A, D & E
- Delvo®Pro L26 probiotics
- Reb-M EVERSWEET™
- ModuMax®
- Delvo® Fresh culture
- Maxilact® lactase



# Beverage concepts

## Example

# +ve RESTORE

## Better sleep, better you

Maximising our sleep is a big boost for our bodies. Sleep is **part of the 'plumbing system of the brain'**. Boosting the restorative power of sleep will optimise not just physical health but also our mental and emotional health.



### Restore

Sleep is the 3<sup>rd</sup> pillar of a healthy lifestyle

Complex issues: Falling asleep, staying asleep, maximizing benefits of sleep

75% of consumers prefer food or drink sleep aids instead of sleep medication

### OCCASION / CATEGORY

- Night-time ritual

### FORMAT

- Shot or serum (add to evening drink or separate shot)

### FLAVOUR

- Chamomile
- Pear

### BENEFITS

- Sleep, Relaxation, Restoration

### INGREDIENTS

- L-Tryptophan
- Vitamin B Complex
- Magnesium

### POSITIONING

Boosting the restorative power of sleep

# Pet Food

Keeping our pets at their healthiest and our planet too

- With a passion for the health and wellbeing of companion animals, DSM offers the best solutions for pet food by combining an extensive portfolio of ingredients with expertise in formulation, nutritional science and consumer insights
- DSM has been supplying the pet food industry for over 50 years, we have built a wealth of knowledge and experience supported by continual investments in research and the development of pet food-specific nutrient technology

## OVN™ for Dogs and Cats

- The Optimum Vitamin Nutrition (OVN™) program provides the confidence that pets receive the full value of vitamin fortification from a safe and reliable source
- Leveraging the full potential of vitamins offers nutrition that supports a long and healthy life

## DHAGold®

- Sustainable algae derived DHA omega-3 for companion animals
- Numerous nutritional studies confirm that both, humans and pets, from infancy to adulthood to senior age, benefit from an adequate intake of DHA



# Safe harbor

This presentation may contain forward-**looking statements with respect to DSM's future 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 presentation, unless required by law. The numbers included in this presentation have not been audited

**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](http://www.dsm.com)





**BRIGHT SCIENCE. BRIGHTER LIVING.™**