

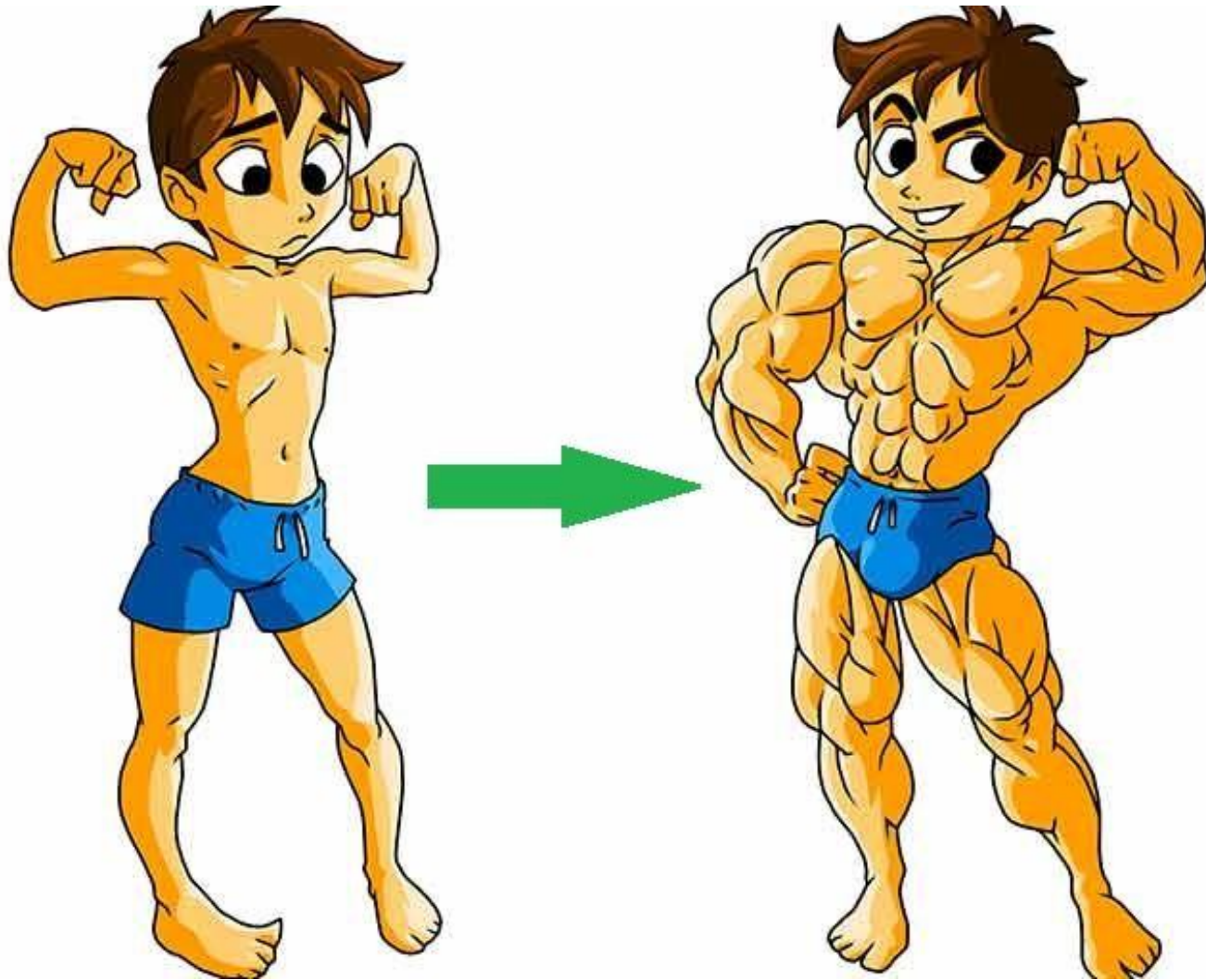


Leading to Better

Protein Technology Overview UCC April 12th 2017



The Power of Protein

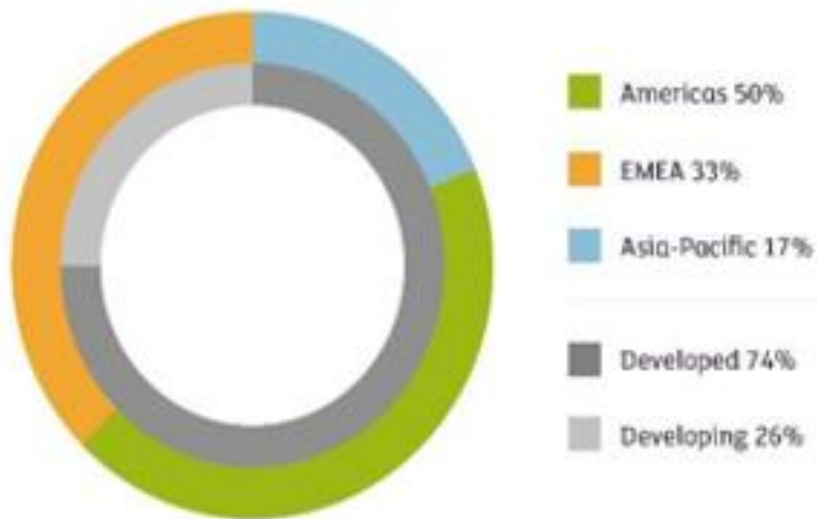


Kerry, Today

2016 revenue: €6.1bn

Quoted on the Dublin and London stock exchange

Kerry, Taste & Nutrition Revenue, by Region



24k+
Employees

800+
Scientists

Supplying
Customers in
140
Countries

130
Production
Facilities

15k+
Products

Operations in
25
Countries

Our Global Technology and Innovation Centre, Naas

€100m
investment

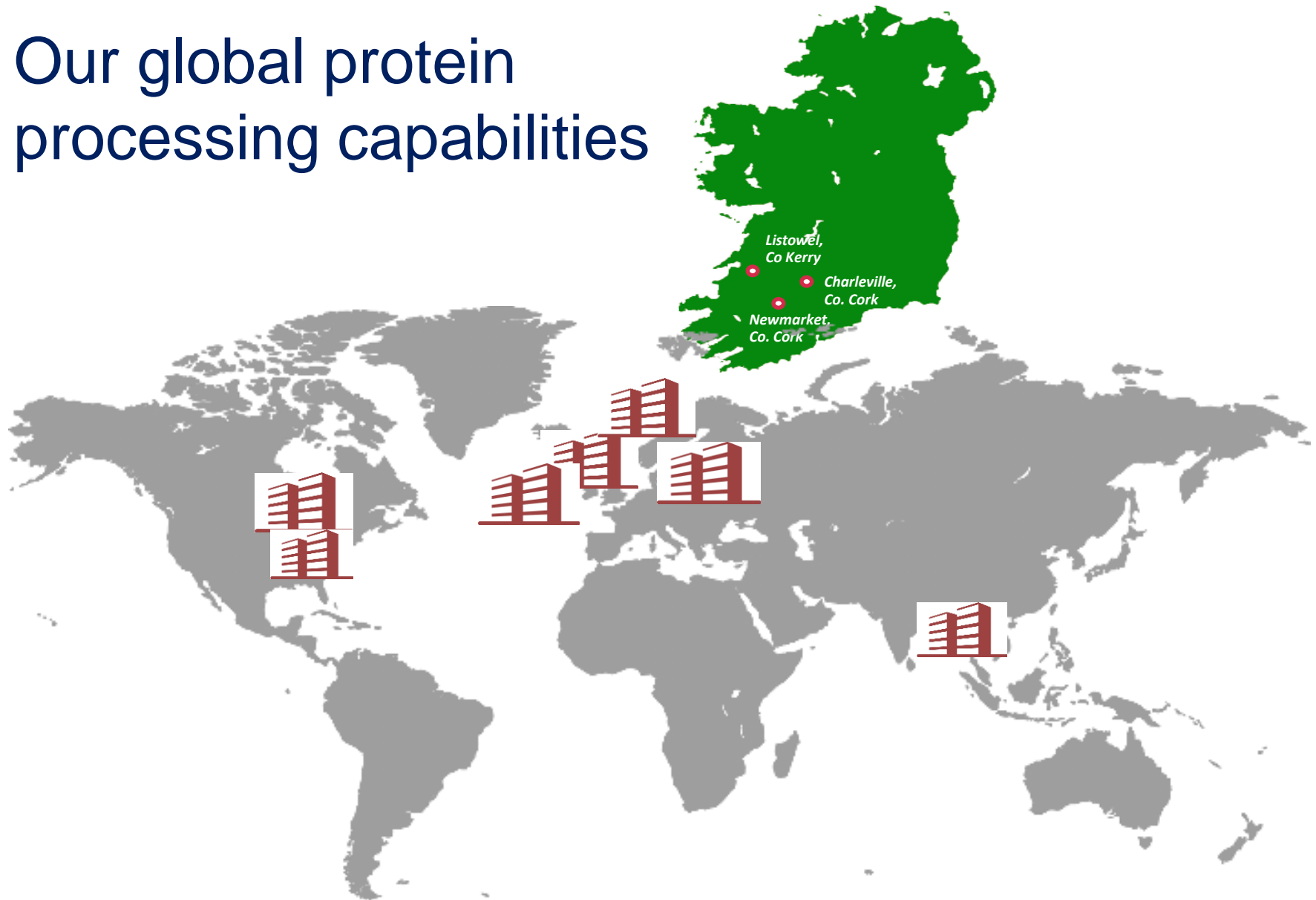
Nutrition
Centre of
Excellence

Collaboration
with leading
academic
& research
facilities

Almost
1,000
employees

30
acre site

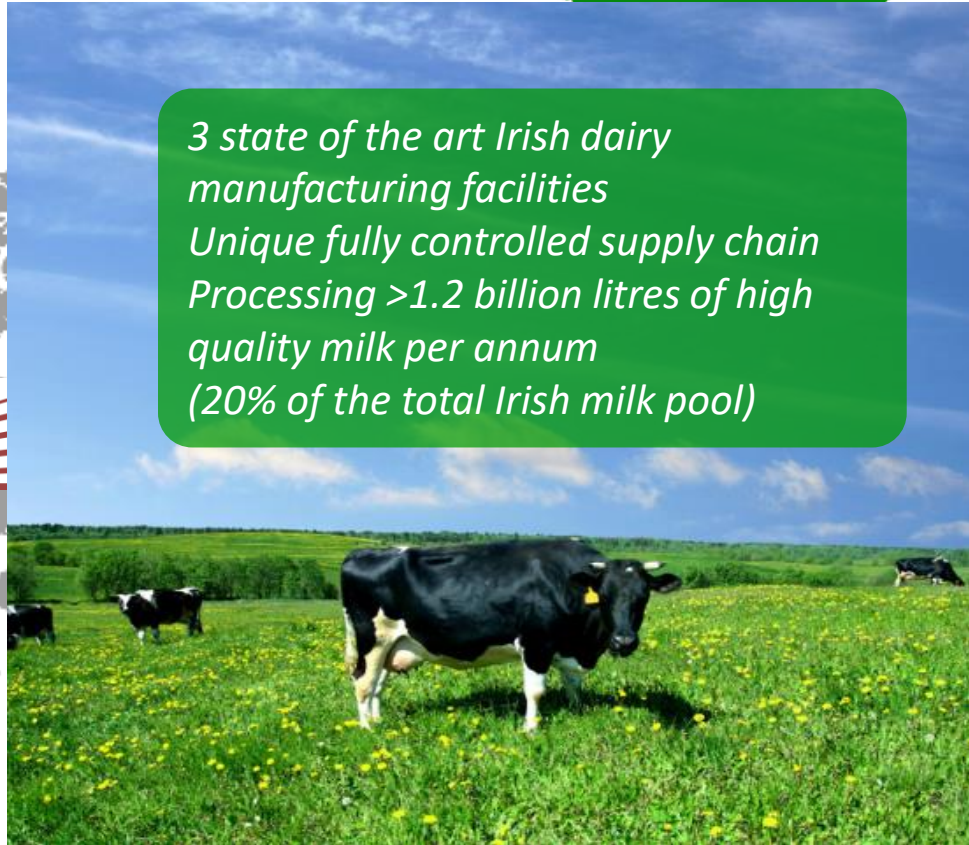
Our global protein processing capabilities



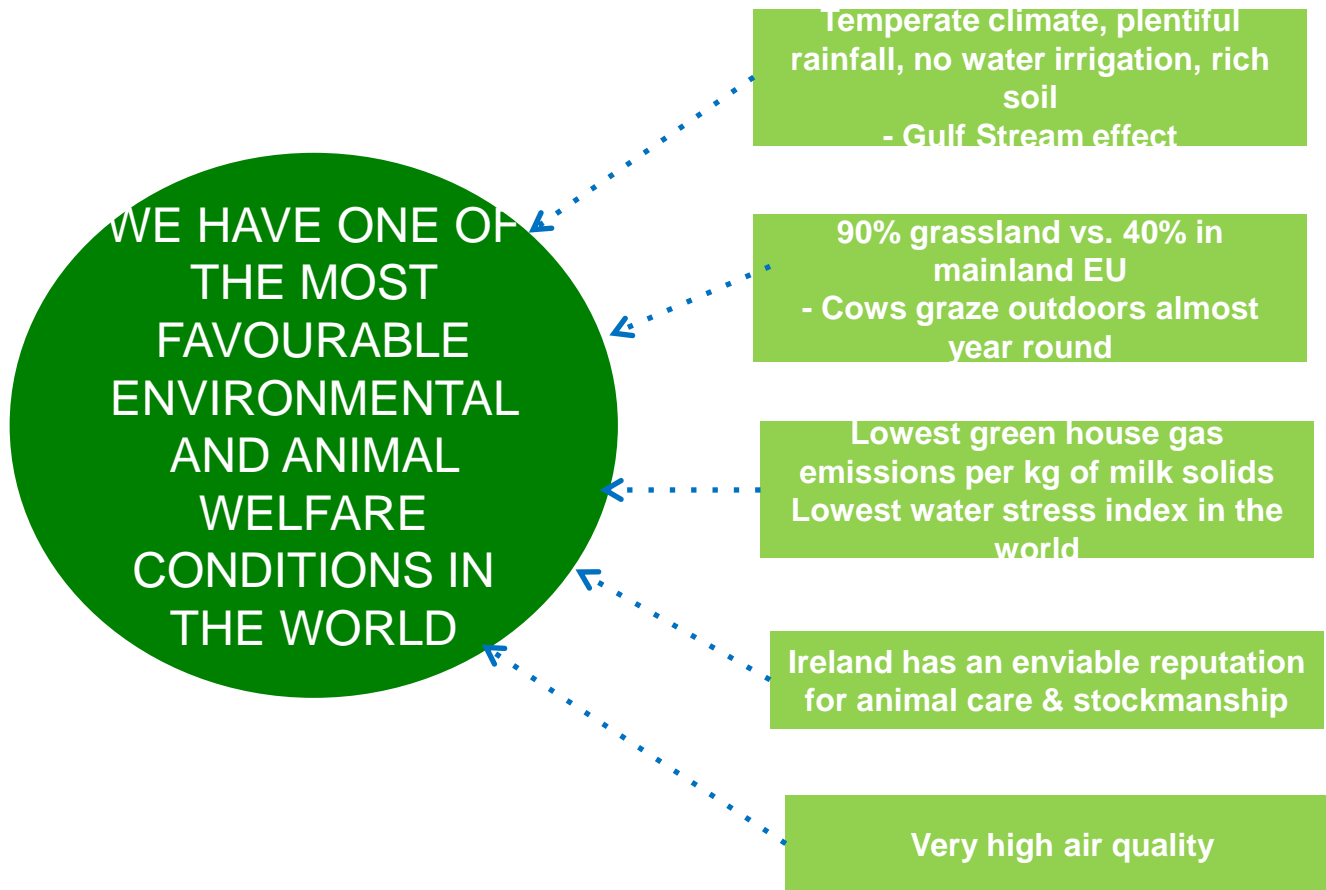
Our global protein processing capabilities



3 state of the art Irish dairy manufacturing facilities
Unique fully controlled supply chain
Processing >1.2 billion litres of high quality milk per annum
(20% of the total Irish milk pool)

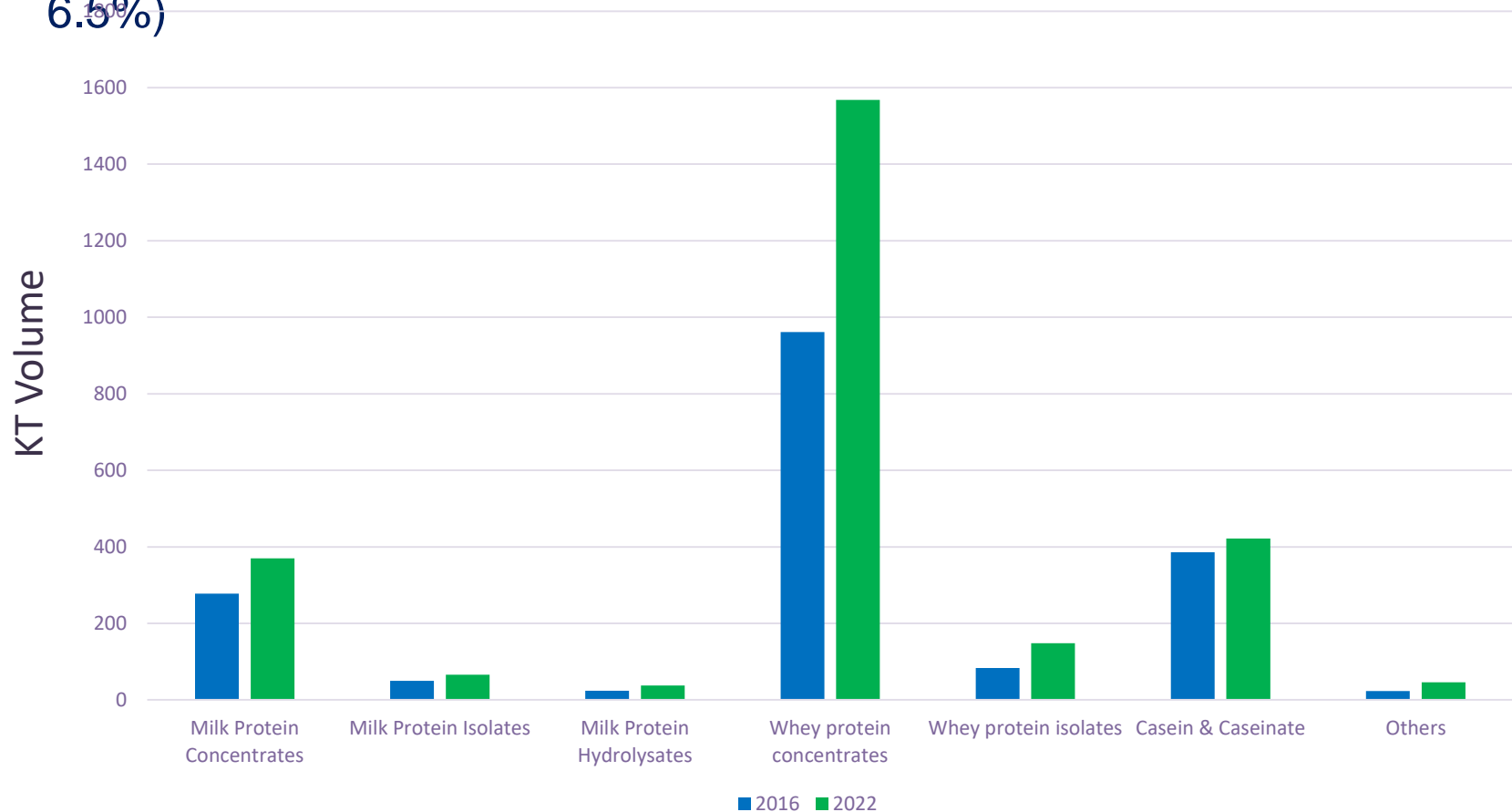


Ireland's grass based low intensity farming is our point of differentiation on global markets



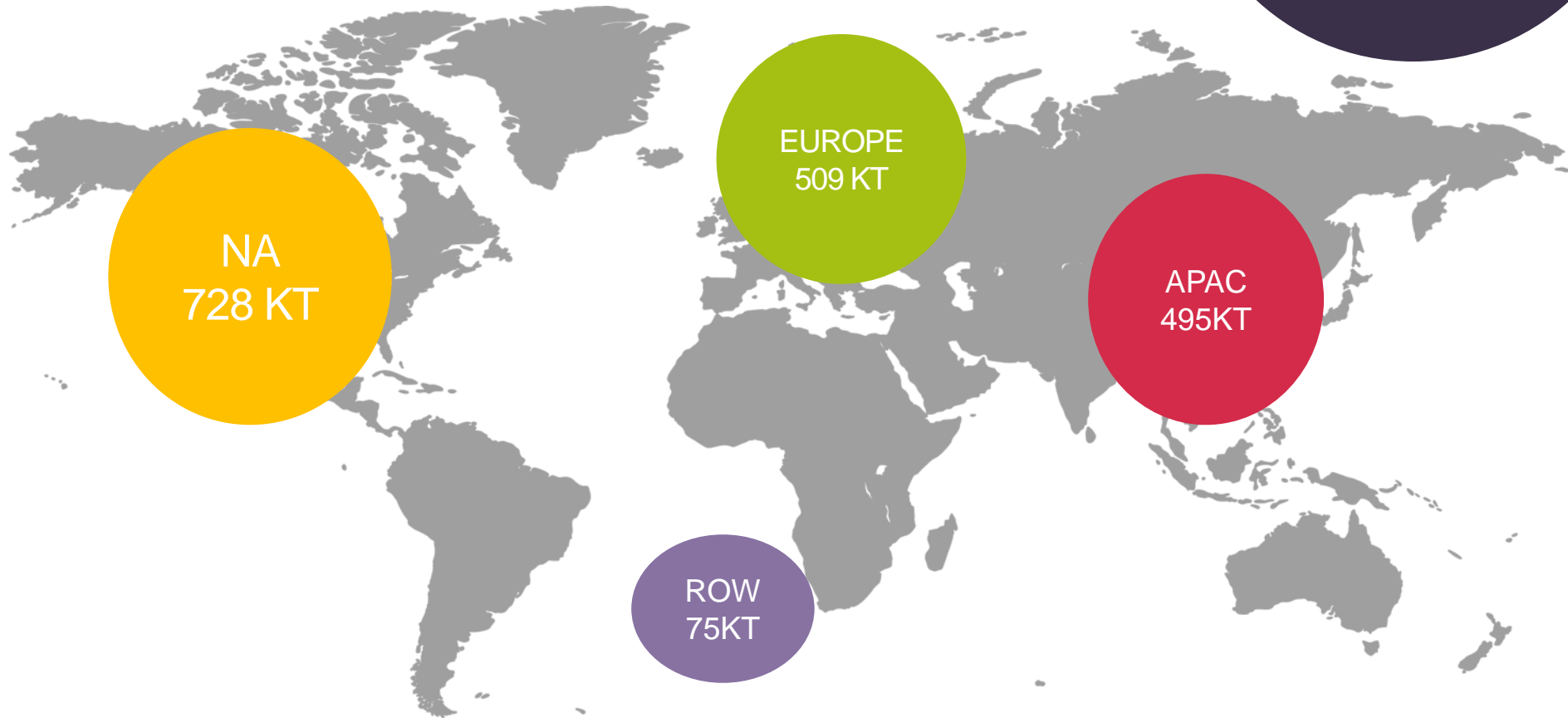
Global Milk Protein Market growth: 2016 – 2022

Valued at \$9.8bn in 2017 & projected to grow to \$13.4bn in 2022 (CAGR 6.5%)



Milk Protein Market Size, by region: 2016 – 2022 (KT)

2016:
World
1,807KT



Source: Markets & Markets

Milk Protein Market Size, by region: 2016 – 2022 (KT)

2022:
World
2,658KT
CAGR:
6.7%*

NA
1049 KT
6.3%

EUROPE
718 KT
6.0%

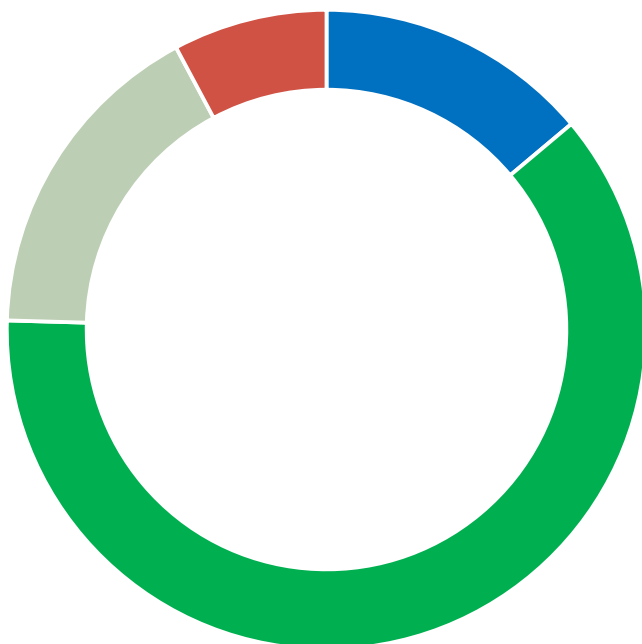
APAC
782T
7.9%

ROW
110K
6.7%T

Source: Markets & Markets. * CAGR 2017-2022

Global Milk Protein Market Size (KT), by application

2016 KT Milk Protein Market



Application	2016	2022	CAGR 2017-2022
IMF	250	375	7%
Sports Nutrition	1105	1680	7.30%
Dairy Products	308	404	4.70%
Others*	142	199	5.90%

■ Infant Nutrition ■ Sports Nutrition ■ Dairy Products ■ Others*

Key Considerations when developing protein based products




Taste

Taste is the number one priority for consumers.



Nutrition

Animal based protein provides the best quality protein with complete amino acid profiles. Plant proteins do not provide a complete profile, thus requiring a blend of protein sources



Functionality

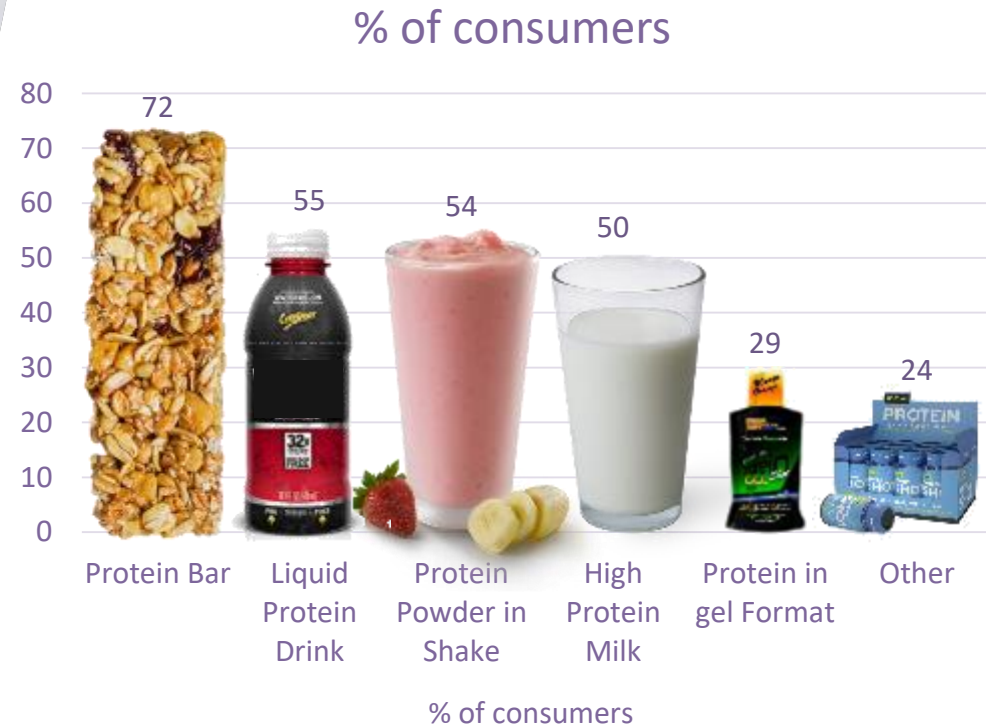
High protein bars have long been associated with poor sensory and texture characteristics.

Viscosity and stability issues may arise in nutritional beverages over shelf life.

Protein User Consumption

Weekly Protein Consumer

The majority of Protein Users consume protein in a bar format, followed by beverages



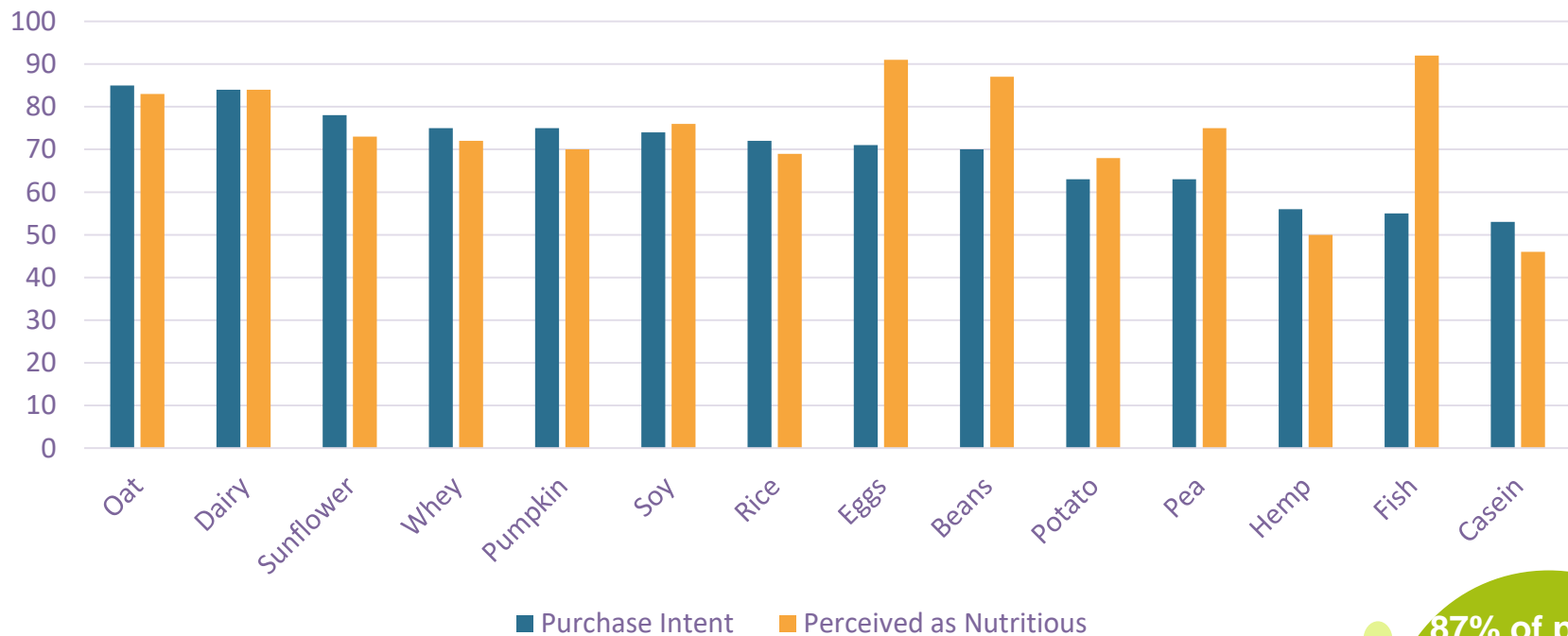
Source: Kerry Foods Primary Research Study 2016

Q: Which of the following products have you consumed in the last 3 months?



Protein Source Purchase Intent

Protein Users



85% of protein users perceive oat as nutritious

Sunflower has the 3rd highest purchase intent

Casein is perceived as the least nutritious and has the lowest purchase intent

87% of protein users perceive beans as nutritious, yet only 70% intend to purchase

Kerry's Specialist Protein Portfolio

Nutritional (Fortification)			Functional
Intact Proteins	Protein Hydrolysates	Protein Fractions	Protein Hydrolysates
Ultramor™ MPI/ MPC	Hyprol™ Dairy and Vegetable Series	Ultramor™ HCF	Hyfoama™
Ultramor™ TNT	Hyprol™ Comfort		Versawhip™
ProDiam™	Hyprol™ Selpro		Hygel™
ProDiam™ TNT			



Confectionary



Nutritional
bars &
snacks



Nutritional
Beverages



Infant
Nutrition



Healthcare
Nutrition

Sports Nutrition

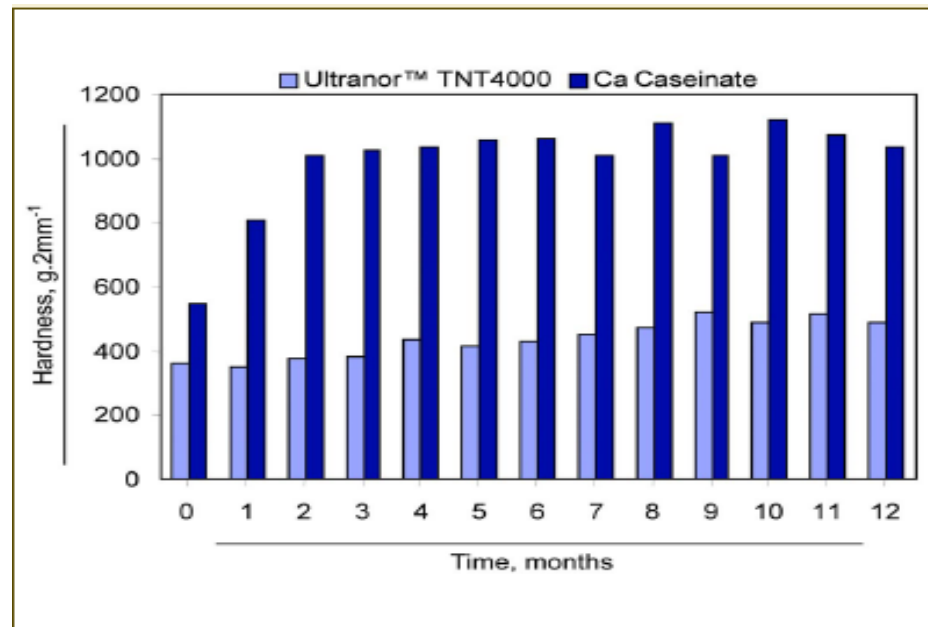
- Sportification becomes mainstream
 - Products targeted at women
- High Protein is here to stay
- Growth in alternative protein sources
- Ethically sourced, natural ingredients

2022:
World
2,658KT
CAGR:
6.7%*

Ultrator™ TNT maintains softness and texture during shelf-life.



- A dairy protein product range designed to meet the functional needs of the nutritional bar sector.
- Produced from fresh skim milk utilising proprietary protein concentration and membrane separation technologies.
- Enhances the textural attributes of nutritional bars and provides superior shelf life stability over conventional milk proteins.
- Versatile: Ultrator™ TNT is easily incorporated into any nutrition bar recipe.



Effect of storage time on the hardness of nutritional bars prepared using Calcium Caseinate and Ultrator™ TNT 4000

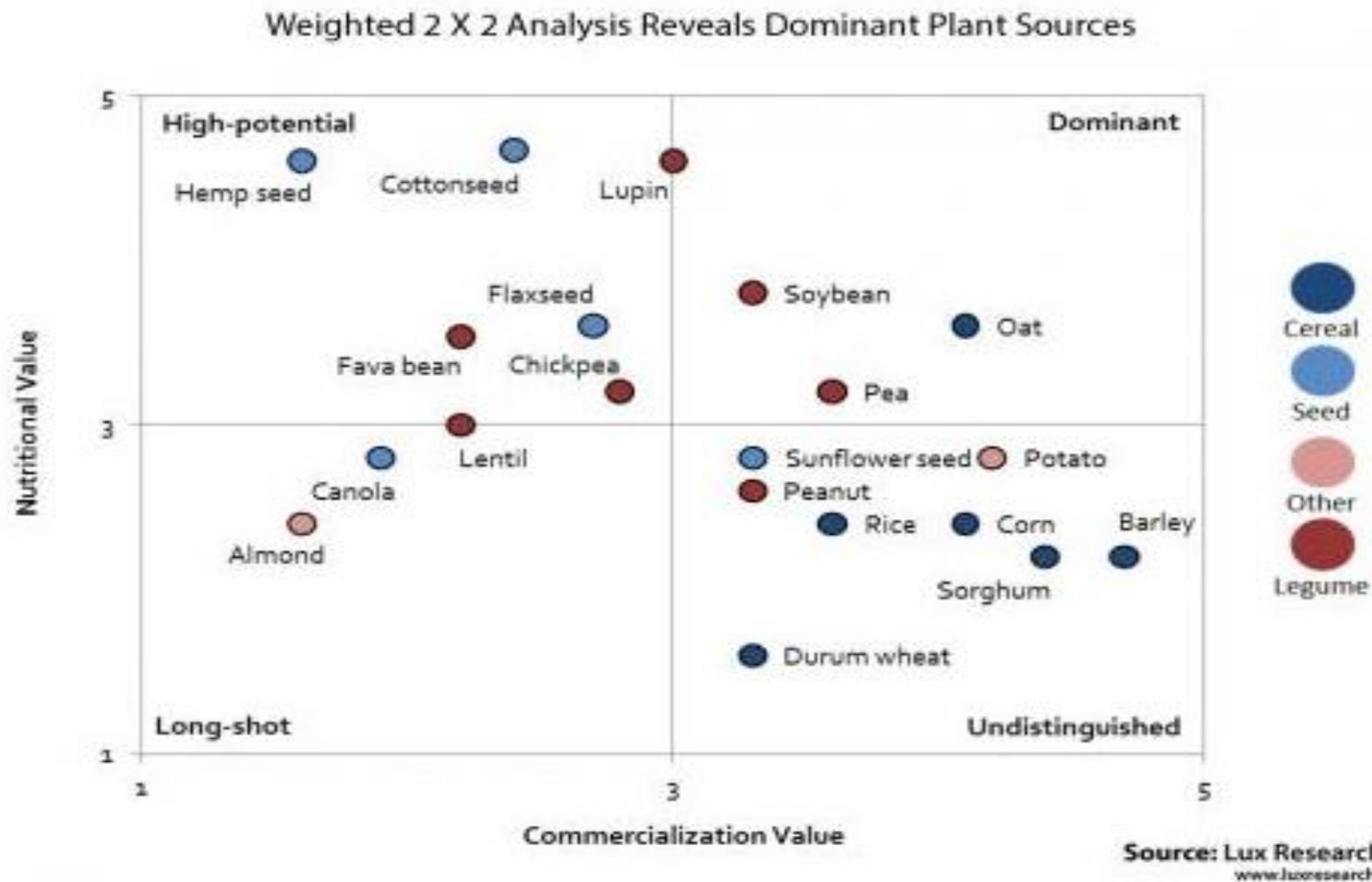
Alternative Sources to Dairy Protein are on the RISE



- *Pea, rice, chia seeds, oats and potato are some of new protein sources finding their way into mainstream food and beverage products.*
- *Soy-Free, Non-Dairy Protein, Vegetarian protein sources are a great way to create high protein foods while also enabling manufacturers to reduce the dairy or meat content of their products*

Future Potential for Alternative Proteins

Evaluation of the alternative protein market, placing sources on a 2x2 matrix, based on eight nutritional and commercialization criteria:



Source: Lux Research, "Finding a Winning Formula for Alternative Proteins," 2016

Kerry's ProDiem™

- A NEW powerful plant protein solution, optimised for nutrition, texture and taste.
- The ProDiem™ range includes combinations of oat, pea and rice, combined with our market leading flavour masking technology.
- A high PDCAAS /DIASS score delivering a completed essential amino acids profile, validated using animal studies
- ProDiem™ is a great option for soy-free, non-dairy and vegan protein and is available to boost the nutritional content of beverages, bar and snack applications.



Global Infant Formula Market

2015:€29.1bn
2020:€40.7bn
n
6.9% CAGR

- WHO target 2016, exclusive breast feeding target of 50% up to 6 months of age.
- Developed markets: Declining birth rates:
 - IMF brands are exploring avenue to add value to their products.
- Developing countries
 - Increasing birth rate
 - The rise of the Upper Middle class and the “younger generation” with higher disposable income.



Chinese Infant Milk Market



2015: €11.3b
2020: €19.4b
n
11.4% CAGR

- The relaxation of the one-child policy led to a 8% increase in the number of births in 2016
- Reducing women in child-bearing age will limit the growth of births.
- New regulation, designed to make the market safer
 - All IMF manufactured requires registration
 - 3 Brand Rule
- Chinese mothers place higher confidence on international IMF
- Consumers' limited sensitivity to price is also a driver beyond the trend towards "super premium" formulas.
 - Irish IMF commands a higher price



Chinese Infant Milk Market



2015: €11.3b
2020: €19.4b
n
11.4% CAGR

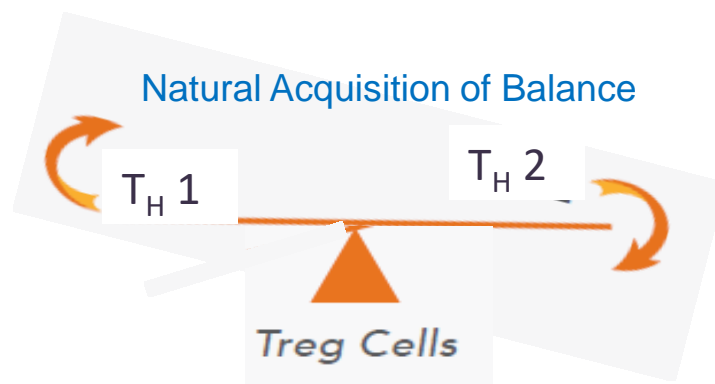
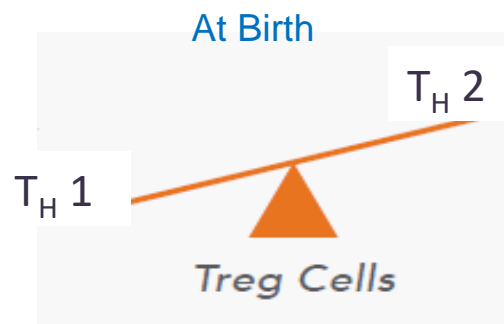
- Hungry for innovation to differentiate brands in the new market of 2018
- Brand reduction from 2,000 to 500 so need to innovate to capture and retain market share.
- Role for new proteins with proven nutritional benefits clinically validated:
 - Protein Fractions- Whey and casein based
 - Specialized hydrolysates
 - Fermented Dairy Options with a focused nutritional benefit
 - Immunity and Cognition are key focus areas



Optimal development of the Immune System

T_H Cell Balance

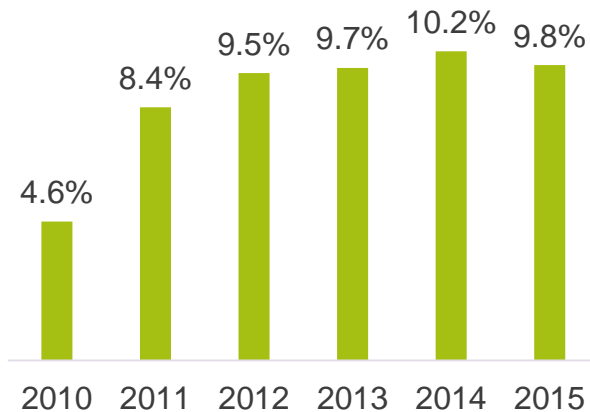
- Ongoing Kerry research is attempting to uncover new immunomodulating ingredients, which have the potential to support the immune system.
- Critical to this, is ensuring a balance between the T-helper 1 (T_H1) and T-helper 2 (T_H2) cells, which are essential components of our immune defence.
- The immune system is dominated by T_H2 cells in a newborn, which overtime shifts to a more balanced T_H1 and T_H2 status. This shift is essential for the normal development of a healthy immune system:



Protein can Help to Meet the Demand for Clean Label

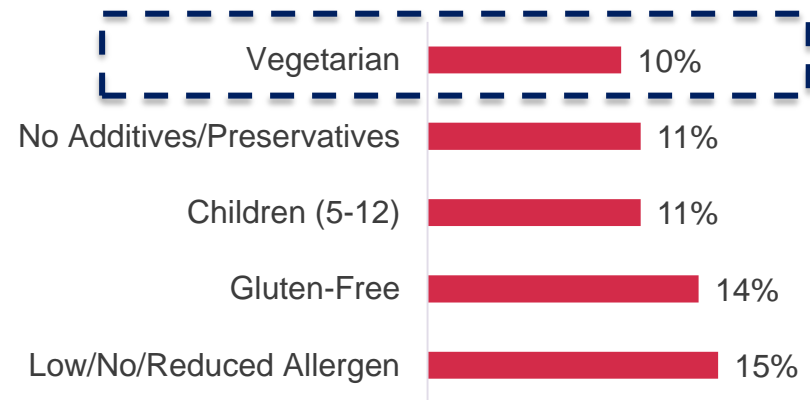
Natural and Functional Proteins can meet the Vegetarian, Vegan and Free From Trends

Global vegetarian Claims in Sugar Confectionery



The percentage share of suitable for vegetarian claims in sugar confectionery has more than doubled in the past 5 years

Top 5 Claims on Global Sugar Confectionery Launches 2015



Dandies All Natural Pumpkin Flavored Marshmallows are gelatin-free, suitable for vegans, free from GMO & gluten & Kosher certified.



BioBon Soft Berries (Soft Berry Fruit Gums) are organic, suitable for vegans, free from gelatine, lactose, gluten or fat.

Industry Challenges

Consumers seeking Allergen Free Products



- Consumers increasingly look for more natural ingredients, that are **free from** additives / preservatives and **allergens**
- Allergens include milk, **eggs**, tree nuts, peanuts, wheat, soybeans...many of these ingredients are being replaced by manufacturers



Fruit Bowl Fruit Chews

Free from added sugar, gluten or anything artificial.
26 | Taste & Nutrition



Jelly Belly Jelly Bean Chocolate Dips
Free from nuts, gluten and gelatine



Katjes Pauly aerated Gummies
Vegetarian product, so no animal gelatin

Hyfoama™ Functional Protein for excellent aeration



Traditional Nougat



Angel Kisses



Marshmallow



**Grained
Marshmallow**



Short Nougat



Chews

Product Concept: Gelatine-free Marshmallow



A vanilla flavoured gelatine-free marshmallow with **Hyfoama™** for gelatine-free claims and **Sherex™** for an improved taste



Kerry Technologies	Features & Benefits:
<ul style="list-style-type: none">• Hyfoama™• Sherex™ CS6550• Vanilla flavour	<ul style="list-style-type: none">• Suitable for vegans and vegetarians• Halal & Kosher Certified• Great Texture

Kerry Nutrition Research Programme

Partners

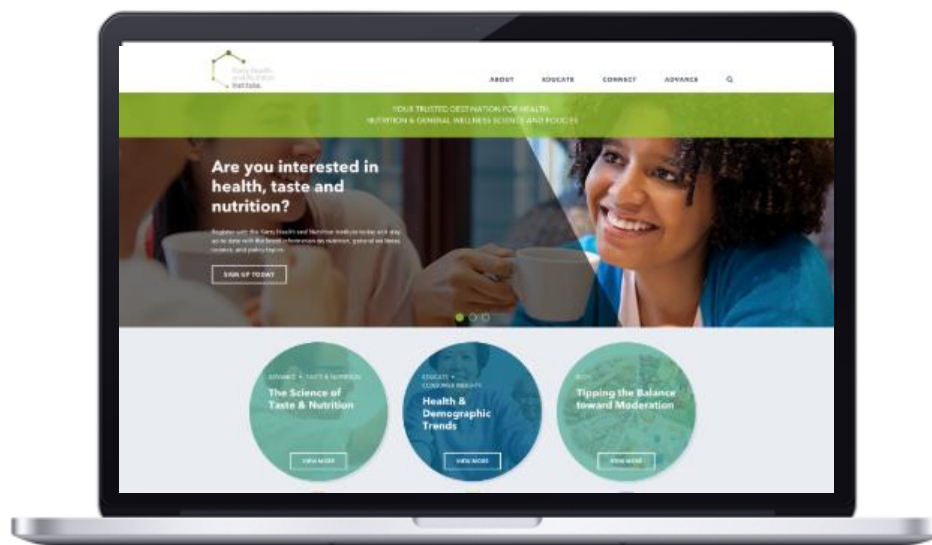


The Kerry Health and Nutrition Institute



We translate nutrition science and policy in actionable insights for the food and beverage industry

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