Presidenza del Consiglio dei Ministri

CNBBSV
COMITATO NAZIONALE PER LA BIOSICUREZZA LE BIOTECNOLOGIE E LE SCIENZE DELLA VITA

IMPLEMENTATION ACTION PLAN (2020-2025) FOR THE ITALIAN MICROBIOME INITIATIVE

Exploit the **role of microbiome** on the **sustainable animal production, health and welfare** with **reduced use/replacement of antimicrobials**

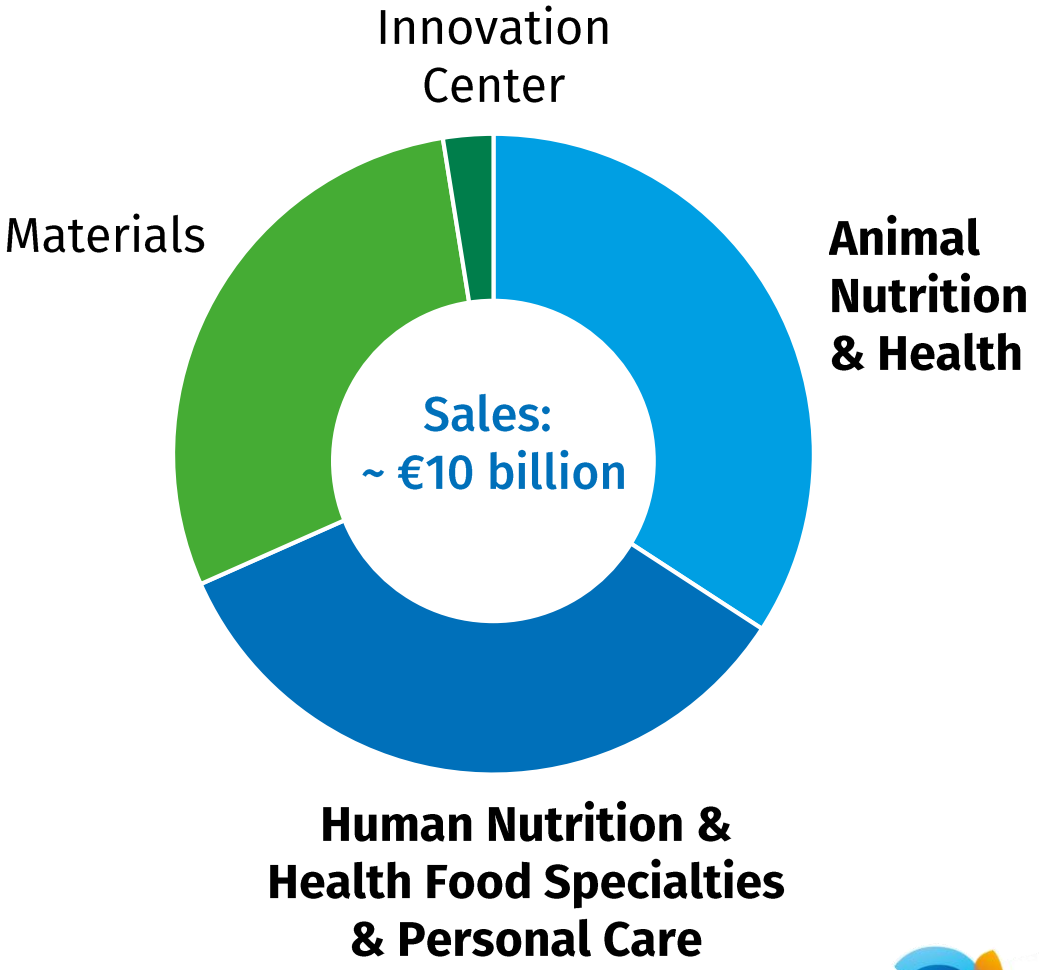
Gilberto Litta
Eubiotics Specialist EMEA – DSM Nutritional Products ANH

DSM at a glance

2019 numbers

OUR PURPOSE IS TO CREATE BRIGHTER LIVES FOR ALL
WE USE OUR BRIGHT SCIENCE TO CREATE SOLUTIONS FOR PEOPLE TODAY AND GENERATIONS TO COME

- **Global, purpose-led, science-based company** active in **Nutrition, Health and Sustainable Living**
  - Human nutrition
  - Animal nutrition
  - Personal care and aroma
  - Medical devices
  - Green products and applications e.g. solar panels
  - New mobility and connectivity e.g. engineering plastics
- **21% of sales** from products **launched in the last 5 years**
- Highly engaged workforce across the world of **~23,000 employees**
- **Purpose-led strategy aligned with the UN Sustainable Development Goals**



For more information visit www.dsm.com

Nutrition at a glance

2019 numbers

- **# 1 Supplier of vitamins, nutritional lipids, carotenoids, nutraceutical ingredients and custom nutrient premixes**
- **46 animal nutrition and 15 human nutrition premix facilities**

World leading supplier of a full range of nutritional ingredients

Sales €6,028 million

Facilities on all continents ~14,500 employees

For more information visit www.dsm.com

New approaches to the production of food of animal origin need to respond to many different issues

Livestock production generates 14.5% of global GHG emissions

33% of food is wasted globally due to loss at harvesting & transport or waste by retailers & consumers

>40% of wild fisheries are over-exploited or collapsed

52% of agricultural soils are depleted or degraded

50% of agricultural land devoted to livestock feed & pasture

50% of available water used in total food production

"Bioactive compounds"
"Microbial enhancers"
"Eubiotics"

Productive inefficiencies

Animal efficiency

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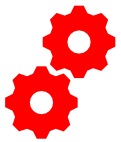
New approaches to the production of food of animal origin need to respond to many different issues

Implementation Action Plan (2020 – 2025) for the Italian Microbiome Initiative

Extensive **characterization of microbiome** from different animal species, production systems, body sites - longitudinal and cross-sectional studies – **exploiting microbial biodiversity** to develop new eubiotics e.g. probiotics or consortia of beneficial microbes (TRL 3)



Development of **models and relationship** between diet composition and animal welfare, intestinal health, feed conversion, GHGs and nitrogen excretion (TRL 4)

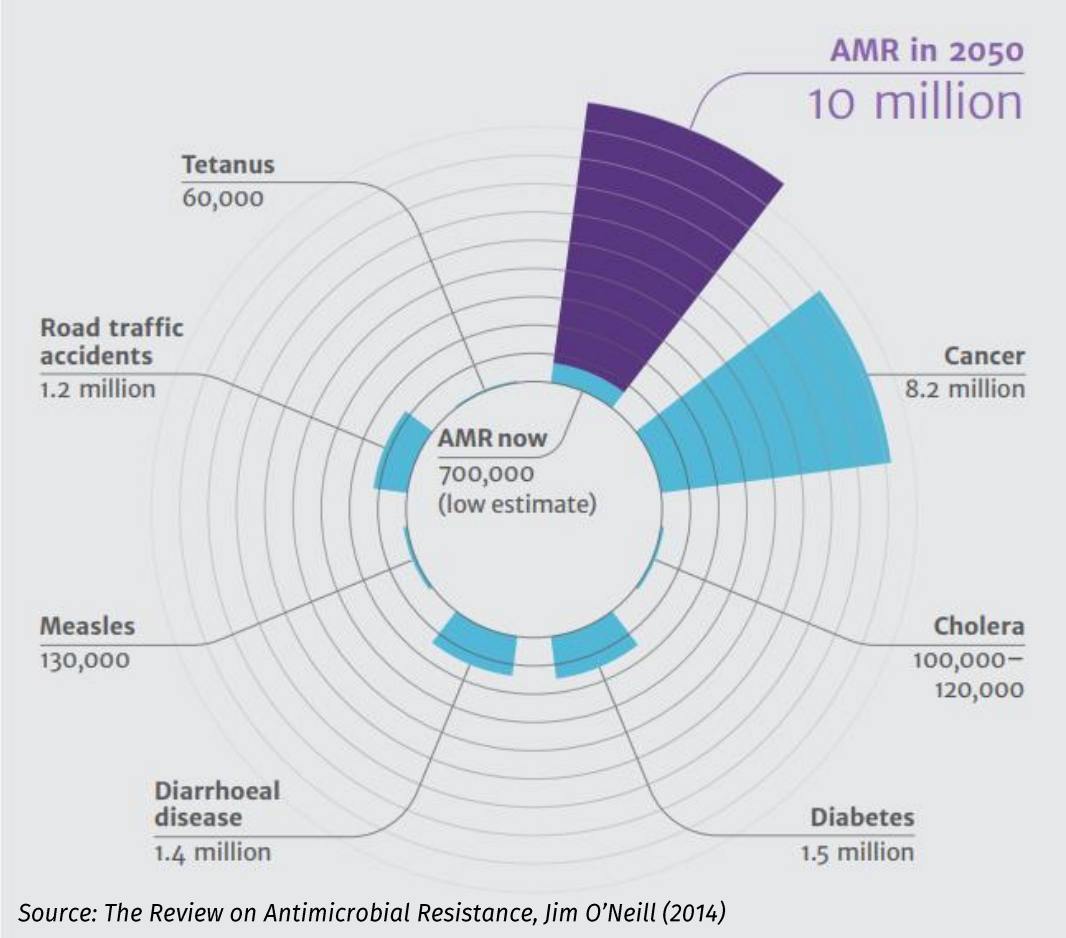
Development of **diagnostic tools and biological markers** able to predict and/or monitor *in vivo* response e.g. to different management practices, diet compositions, eubiotics supplementation (functional feeds) (TRL 3)

Animal derived food and charcutier need a better knowledge about microbiome

- to establish positive microbiota
- to reduce additives and preservatives
- to improve animal origin food quality e.g. fatty acid profile, pigmentation (functional foods)
- to ensure an improvement in durability and shelf-life. (TRL 3)

Fast growing demand for reduction or avoidance of antibiotics in animal production

Deaths attributable to AMR every year compared to other major causes of death



Source: The Review on Antimicrobial Resistance, Jim O'Neill (2014)

FAO releases action plan for antibiotic resistance

FAO will help countries develop strategies for tackling the spread of antimicrobial resistance in their food supply chains.

The Food and Agricultural Organization released this statement just before a high-level UN event on September 21st in New York, where the UN General Assembly will discuss the significant risk to human health posed by 'antimicrobial resistance' (AMR) and its connection to and impact on agriculture.

NEWS

McDonald's, Subway and KFC fail to respond to worldwide antibiotic resistance health risk

25 Apr 2016

Consumers International (CI) has today launched a new report highlighting the failure of global fast food chains to confront the challenge posed by antibiotic resistant bacteria.

#Antibiotics OffTheMenu

Antibiotic resistance constitutes a global public health crisis to which the overuse of he use of antibiotics in agriculture n 2010 to 105,600 tons in 2030. If ice we could face a future where

Antibiotic free chicken production: Tyson Foods shifts up a gear

By Aeron Einstein-Curtis

23-Feb-2017

Post a comment

Related tags: Tyson, Antibiotic use, Perdue, Sanderson Farms, Antibiotic resistance, Poultry production

Tyson Foods is set to switch its retail line of company-branded chicken products to birds raised without any antibiotics.

China - July 1st, 2020

- **Ban of antibiotic growth promoters**
- **Antibiotic use (prophylaxis, therapy) has fallen 50% between 2014 and 2018**

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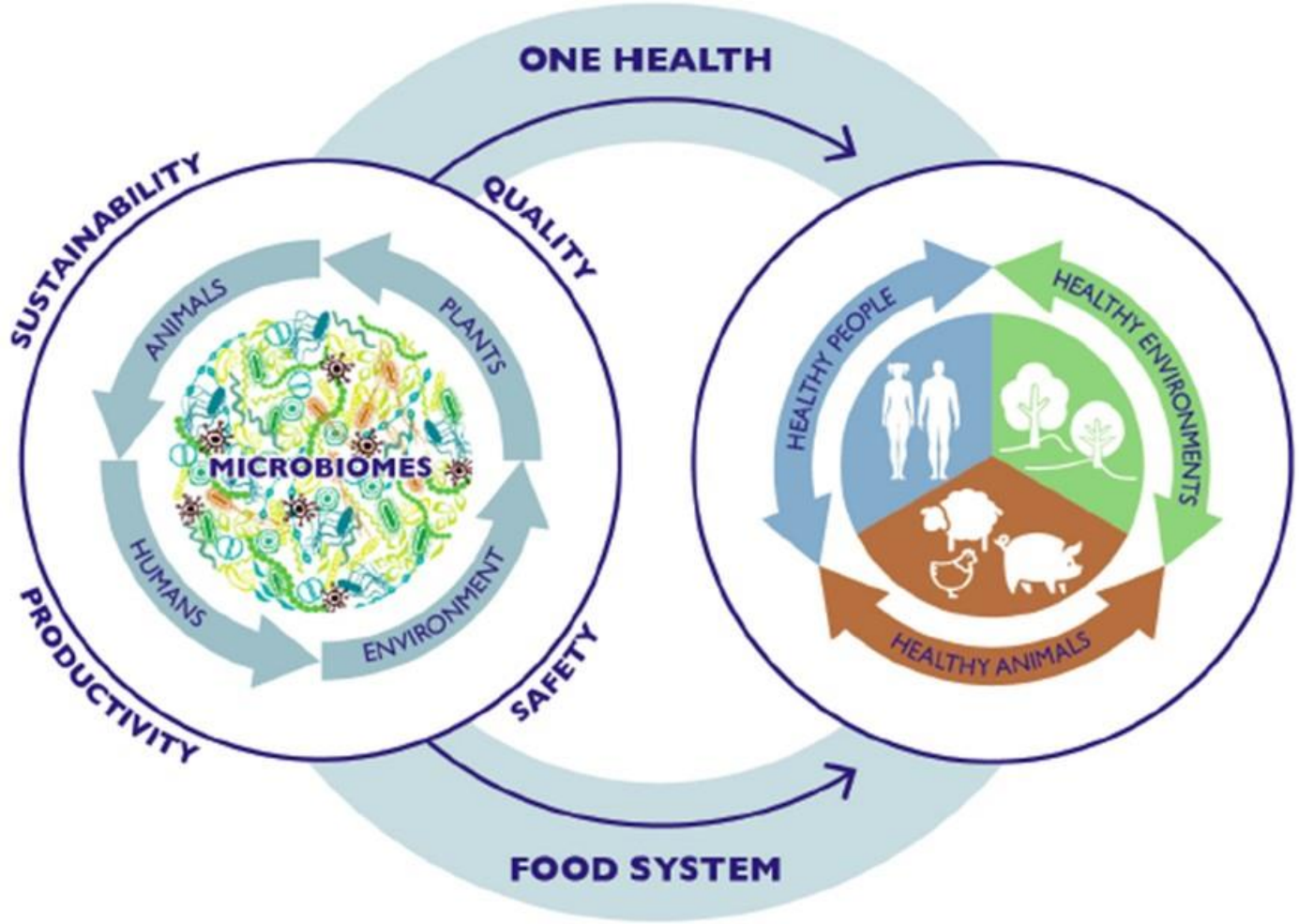
“One Health” Approach



*Awareness of **living in a globalized world**, where animal and human health are strictly linked, **requires a “One Health” approach***

“In the post-antibiotic era, we need to gather tools and better knowledge on how microbiome composition prevents infection by dangerous pathogens”

Reduction or avoidance of antibiotics in animal production

Implementation Action Plan (2020 – 2025) for the Italian Microbiome Initiative

1. Set up of **specific models**, including in silico, ex vivo and in vivo approaches, **to study the microbiome changes during disease progression** (TRL 4)
2. **Develop feed additives** targeted to increase the **natural resistance** of the animals against pathogens (TRL 4)
3. **Develop non-antibiotic therapeutics** to treat specific animal diseases (TRL 3)
4. **Define the rules for the authorization of the non-antibiotic therapeutics, in order to promote the industrial investments on this cutting-edge research field.**

Source: DSM Nutritional Products