



PET FOOD MICROBIOME SOLUTIONS:

THE GOOD, THE FLAWED & THE FUTURE

Indice dei contenuti

Executive Insight	3
1. Why Functional Nutrition Is Reshaping Pet Food	4
2. The Microbiome as a Central Health Regulator	5
The Gut as a Functional Hub	5
3. The Regulatory Reality in the European Union	6
Regulatory Implication	6
4. Why Many Microbiome Products Fail	7
The Core Gap	7
5. What More Robust Microbiome Solutions Look Like	8
5.1 Precision: Species-Specific Probiotics	8
5.2 Stability: The Rise of Postbiotics	8
6. From Science to Industrial Application	9
7. Traditional Models vs Next-Generation Models	9
8. From Ingredient Suppliers to Solution Partners	10
9. Conclusion	10
Industry Case Study: A More Integrated Microbiome Model	10

Executive Insight

 Microbiome innovation is rapidly becoming one of the most dynamic growth areas in pet nutrition.



Probiotics, postbiotics, prebiotics, and gut-health claims are increasingly appearing across supplements, functional treats, and complete nutrition products.

Yet an uncomfortable reality is emerging: **many microbiome solutions currently on the market are scientifically weak, regulatorily vulnerable, or industrially difficult to scale.**



In many cases, **products fail** because they rely on:

- generic probiotic strains
- weak clinical validation
- poor processing stability
- regulatory shortcuts
- limited differentiation



As competition intensifies, the next generation of **successful microbiome products** will likely be those capable of aligning:

- science
- regulation
- manufacturing feasibility
- commercial scalability

The future of microbiome innovation will not be built on marketing claims alone.



1. Why Functional Nutrition Is Reshaping Pet Food

The European pet food market now exceeds €30 billion, with continued growth driven by premiumization and health-oriented products (FEDIAF, 2024).

At the same time:

- functional nutrition is accelerating
- condition-specific formulations are expanding
- pet owners increasingly expect targeted health benefits
- retailers are seeking stronger product differentiation

The industry is shifting from:

FEEDING



HEALTH SUPPORT



FUNCTIONAL MANAGEMENT

Microbiome solutions are becoming one of the most **attractive innovation spaces** within this transformation.



Why this matters for pet food manufacturers

- increasing pressure to differentiate premium products
- growing demand for science-backed claims
- rising regulatory scrutiny
- margin pressure on commoditized formulas
- stronger retailer expectations for innovation

2. The Microbiome as a Central Health Regulator

The microbiome is no longer viewed solely through a digestive lens.

Today, it is increasingly recognized as a key regulator of systemic health in companion animals.

It plays an important role in:

- | | |
|---------------------------|--------------------------------|
| • immune modulation | • intestinal barrier integrity |
| • metabolic signaling | • inflammatory regulation |
| • gut-brain communication | • gut-skin interactions |

Scientific literature increasingly supports the **microbiome as a multi-system functional platform.**



The Gut as a Functional Hub



Key references

Barko et al., 2018
Suchodolski, 2016

3. The Regulatory Reality in the European Union

This is where many companies underestimate complexity.

Under **Regulation (EC) No 1831/2003**, probiotics used in pet food in the European Union are classified as zootechnical feed additives.

They require authorization from European Food Safety Authority and authorized strains are listed in the **European Commission Register of Feed Additives**.



This means:

- a strain approved for one species cannot automatically be used in another
- only a limited number of strains are authorized for dogs and cats
- claims and usage conditions remain highly regulated

Many companies still discuss probiotics as if all strains were interchangeable.

In Europe, this assumption is simply incorrect.

Regulatory Implication

Generic probiotic concept

✗ Not sufficient

Authorized strain

- ✓ Correct species
- ✓ Defined conditions of use
- ✓ Regulatory compliance

4. Why Many Microbiome Products Fail

Despite growing scientific enthusiasm, many commercial solutions fail to deliver consistent outcomes.

Common reasons include:

- generic or poorly characterized strains
- lack of species specificity
- limited clinical validation
- poor strain traceability
- instability during manufacturing processes
- overpromised marketing claims
- weak product differentiation



Scientific consensus continues to reinforce that probiotic effects are highly strain-specific
(Hill et al., 2014).

Several studies have shown that industrial processing conditions can significantly reduce probiotic viability
(Deng et al., 2015).

The Core Gap

Scientific promise

- ≠ Regulatory compliance
- ≠ Industrial performance
- ≠ Consumer outcomes



5. What More Robust Microbiome Solutions Look Like

5.1 Precision: Species-Specific Probiotics

Effective probiotic solutions increasingly require:

- strain-level identification
- species specificity
- regulatory compliance
- demonstrated functional activity

The industry is moving from:

generic probiotics



precision microbiome tools

5.2 Stability: The Rise of Postbiotics

Postbiotics are defined by International Scientific Association for Probiotics and Prebiotics as inanimate microorganisms that confer health benefits to the host (*Salminen et al., 2021*).

They offer important industrial advantages:

- high stability
- easier formulation integration
- compatibility with industrial processing
- improved consistency



Next-Generation Model

Precision
(authorized probiotics)



Stability
(postbiotics)



**RELIABLE
MICROBIOME
SOLUTIONS**

6. From Science to Industrial Application

For pet food manufacturers, scientific validation alone is not enough.

Commercial success requires scalability.

Common formulation **constraints** include:

- extrusion temperatures
- moisture exposure
- shelf-life degradation
- ingredient compatibility
- manufacturing efficiency

A viable microbiome solution must therefore be:

- scientifically validated
- regulatorily compliant
- technologically robust
- commercially scalable



7. Traditional Models vs Next-Generation Models



Traditional approach

- Generic strain selection
- Limited regulatory planning
- Stability challenges
- Broad functional claims
- Commodity positioning



Next-generation approach

- Species-specific precision
- Regulatory alignment
- Industrial robustness
- Targeted applications
- Differentiated value creation

Competitive Shift

Generic microbiome claims



Increasing commoditization

Validated

+ Compliant

+ Scalable solutions



Long-term differentiation

8. From Ingredient Suppliers to Solution Partners

Developing successful microbiome products increasingly requires capabilities beyond ingredient sourcing.

Manufacturers now need partners that understand:

- microbiology
- regulatory frameworks
- formulation science
- commercialization pathways



9. Conclusion

The microbiome represents one of the largest innovation opportunities in modern pet nutrition.

But long-term success will only come from solutions capable of aligning:

- science
- regulation
- technology
- commercial execution

The future belongs to microbiome solutions that are not only innovative in theory, but reliable in real-world application.

Industry Case Study: A More Integrated Microbiome Model



One example of this integrated model is being developed by NBF LANES through its **BIOME division**. With nearly 40 years of experience in functional animal nutrition, the company focuses on translating microbiome science into scalable commercial applications.

[Discover Additives, Ingredients and Services →](#)

Additives: Species-Specific Probiotics

- *Limosilactobacillus reuteri* DSM 32203 (dog)
- *Limosilactobacillus reuteri* DSM 32264 (cat)

These strains are authorized by European Food Safety Authority and designed to support:

- regulatory compliance
- species-specific functionality
- consistent performance

Ingredients: Postbiotics

- *Limosilactobacillus reuteri* NBF DC PRO

Developed from the same bacterial platform, this postbiotic supports:

- formulation stability
- industrial compatibility
- scientific continuity

Services: From Concept to Commercialization

NBF LANES supports partners through:

- technical consultancy
- scientific support
- formulation development
- regulatory alignment
- product positioning

The objective is simple: **turn microbiome science into effective, compliant, and scalable pet nutrition products.**



References

FEDIAF Facts & Figures 2024
 Regulation (EC) No 1831/2003
 European Commission Register of Feed Additives
 Hill et al., 2014
 Salminen et al., 2021
 Barko et al., 2018
 Suchodolski, 2016
 Deng et al., 2015



PET FOOD
MICROBIOME
SOLUTIONS:
THE GOOD, THE FLAWED & THE FUTURE