Research & Reviews: Journal of Veterinary Science

e-ISSN: 2320-0189

Animal Microbiome Studies: Exploring the Hidden World Within Animals

Amina O. Bello*

Department of Veterinary Public Health, Savannah National University, Nigeria

Editorial

Received: 02-Dec-2025, Manuscript No. jvs-25-177941; **Editor assigned:** 04-Dec-2025, Pre-QC No. jvs-25-177941 (PQ); **Reviewed:** 13-Dec-2025, QC No jvs-25-177941; **Revised:** 20-Dec-2025, Manuscript No. jvs-25-177941 (R); **Published:** 30-Dec-2025, DOI: 10.4172/2320-0189.9.002

***For Correspondence**

Amina O. Bello, Department of Veterinary Public Health, Savannah National University, Nigeria

E-mail: a.bello@snu-vet.ng

Citation: Amina O. Bello, Animal Microbiome Studies: Exploring the Hidden World Within Animals. RRJ Hosp Clin Pharm. 2025.9.002.

Introduction

Animal microbiome studies focus on the diverse communities of microorganisms that inhabit the bodies of animals, including bacteria, fungi, viruses, and archaea. These microbial populations are found in various body sites such as the gastrointestinal tract, skin, respiratory system, and reproductive organs. Advances in molecular biology and sequencing technologies have greatly expanded understanding of the animal microbiome, revealing its critical role in health, nutrition, immunity, and disease. As a result, microbiome research has become an important area in veterinary science, animal production, and biomedical research [1,2].

Discussion

The gastrointestinal microbiome is the most extensively studied component of the animal microbiome due to its significant influence on digestion and metabolism. In herbivorous animals, such as ruminants, microbial fermentation enables the breakdown of complex plant fibers into usable energy, directly affecting growth and productivity. In companion animals and livestock, a balanced gut microbiome supports nutrient absorption, vitamin synthesis, and immune system development. Disruption of this balance, known as dysbiosis, has been linked to conditions such as diarrhea, inflammatory diseases, obesity, and reduced performance [3,4].

Beyond digestion, the animal microbiome plays a key role in immune regulation and disease resistance. Commensal microorganisms help prevent colonization by harmful pathogens through competitive exclusion and modulation of immune responses. Skin and respiratory microbiomes also contribute to barrier protection and influence susceptibility to infections. Understanding these interactions has led to the development of microbiome-based interventions, including probiotics, prebiotics, and synbiotics, aimed at improving animal health without excessive reliance on antibiotics [5].

Animal microbiome studies are increasingly important in addressing global challenges such as antimicrobial resistance and sustainable food production. By promoting natural microbial balance, microbiome-based strategies can reduce the need for antimicrobial drugs in livestock systems. Additionally, microbiome research supports personalized veterinary medicine, as microbial profiles can vary by species, breed, diet, environment, and management practices. Advanced tools such as metagenomics and bioinformatics allow researchers to analyze complex microbial communities and identify functional pathways linked to health and disease.

Conclusion

Animal microbiome studies have transformed understanding of the complex relationships between animals and their microbial partners. By revealing how microbiomes influence nutrition, immunity, and disease, this field offers innovative approaches to improving animal health, productivity, and welfare. Continued research and application of microbiome science will play a vital role in sustainable veterinary practice and the future of animal health management.

References

1. Vivek S, Michael E (2019) Interventional treatments for metastatic bone cancer pain. Pain Manag 9: 307-315.
2. Barry MB (2021) Assessment and management of metastatic bone cancer in emergency departments. Emerg Nurse 29: 20-25.
3. Liviu F, Michael B, Raoul B, Yusuf J, Johan L, et al. (2019) Pain: Persistent postsurgery and bone cancer-related pain. J Int Med Res 47: 528-543.
4. Patrick WM (2014) Bone cancer pain: from mechanism to therapy. Curr Opin Support Palliat Care 8: 83-90.
5. Chao M, Chuanhao T, Jun L (2018) [Progress of Biomarkers in Diagnosis of Bone Metastases of Lung Cancer]. Zhongguo Fei Ai Za Zhi 21: 615-619.