

Special Issue

Livestock Genomics: Decoding Complex Traits Through Network Biology

Message from the Guest Editors

With rapid progress in biotechnology and computational biology, livestock genomics is entering a new era. While traditional breeding and quantitative genetics have driven genetic improvement, today's challenges—sustainability, precision, and climate adaptability—call for deeper insights into complex traits. This Special Issue highlights network-based approaches to understanding economically important traits in livestock, such as disease resistance, fertility, feed efficiency, and stress tolerance. These traits emerge from dynamic interactions among genes, proteins, metabolites, and environmental factors. Network biology offers a powerful framework to study these systems. Tools like gene co-expression analysis, protein–protein interaction networks, and integrated omics can reveal key regulatory hubs and pathways shaping phenotypes. We welcome research and reviews that demonstrate how systems-level approaches can advance livestock breeding and management in a complex, data-rich world.

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