

Blood-Only Diet? Genes Explain How

Vampire bats evolved extreme biological adaptations to survive on blood alone.

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THE DATA

900-fold

Gene activity increase

In vampire bat stomachs, a fluid-transporting gene ramps up after feeding.

This gene, typically active in salivary and sweat glands, shows over 900-fold upregulation in vampire bats after consuming blood. This enables rapid fluid excretion, allowing them to fly home without the burden of excess liquid—a critical adaptation for a flying mammal that must remain lightweight.



Source: Nature · Published November 16, 2026
https://www.nature.com/articles/d41586-026-03706-8

01

Stomachs Repurposed for Blood Storage

Vampire bats have transformed their stomachs into pH-neutral, stretchy storage sacs lined with connective tissue. This adaptation allows them to ingest up to half their body weight in blood without digestion, effectively turning their stomach into a temporary reservoir. This biological innovation mirrors the need for scalable storage in agtech systems—where data, nutrients, or resources must be temporarily held before processing.



02

Metabolic Trade-Offs in Extreme Diets

Despite surviving on blood, vampire bats retain lipid-digestion genes in infancy but downregulate them in adulthood. This suggests a developmental shift in metabolic priorities, akin to how agtech systems may prioritize energy efficiency over nutrient diversity in closed-loop farming. The loss of taste genes for sweet and bitter also reflects a trade-off: reduced sensory input for survival efficiency. This underscores a key principle in agtech AI: optimal systems may not need full sensory or metabolic redundancy.

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