Neuropeptide Y (NPY) Y5 Receptor Knock-out (Y5R KO) Mice

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Biomaterial – Mouse

Biomaterial Description

This genetically engineered mouse model lacks the neuropeptide Y (NPY) Y5 receptor (Y5R), a G-protein-coupled receptor implicated in the regulation of feeding behavior and energy homeostasis. Developed by targeted gene disruption, these mice provide a powerful tool for dissecting the role of Y5R in appetite control, obesity, and neuroendocrine signaling. Despite initial hypotheses, Y5R KO mice exhibit normal feeding behavior and body weight, challenging the previously assumed central role of Y5R in obesity and suggesting compensatory mechanisms within the NPY system. However, these mice do develop mild late-onset obesity and demonstrate enhanced sensitivity to kainate-induced seizures.

Applications

-Investigation of NPY signaling pathways in the central nervous system.

-Study of feeding behavior, energy balance, and metabolic regulation.

-Evaluation of drug targets for anti-obesity therapies.

-Exploration of receptor redundancy and compensation in GPCR signaling networks.

-Comparative studies with other NPY receptor knockouts (e.g., Y1, Y2, Y4).

Advantages

-Genetically defined model for studying Y5 receptor function.

-Viable and fertile, allowing for long-term and cross-generational studies.

-Enables mechanistic insights into the complexity of appetite regulation.

-Useful for validating or refuting drug targets in obesity research.

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