

RiboTag Mouse Model

Biomaterial - Mouse

Biomaterial Description

The RiboTag mouse model is a genetically engineered tool that enables cell-type-specific isolation of actively translating mRNA from complex tissues. This model utilizes a Credependent allele encoding an HA-tagged ribosomal protein (Rpl22), allowing for immunoprecipitation of ribosome-bound mRNA from genetically defined cell populations. This approach bypasses the need for physical cell sorting, preserving the native transcriptional state and enabling high-resolution transcriptomic profiling in vivo.

Applications

Applications

- -Cell-type-specific transcriptome analysis in complex tissues such as brain, liver, and heart
- -Investigation of translational regulation in development, disease, and response to stimuli
- -Functional genomics studies in neuroscience, immunology, and cancer biology
- -Complementary use with Cre/CreER driver lines for spatial and temporal control of gene expression
- -Profiling of rare or difficult-to-isolate cell populations without dissociation artifacts

Advantages

- -Cell-type specificity: Enables precise targeting using cell-type-specific Cre/CreER lines
- -Preservation of native state: Avoids artifacts from tissue dissociation or cell sorting
- -High sensitivity: Enriches for actively translated mRNA, enhancing signal-to-noise ratio
- -Versatility: Applicable across a wide range of tissues and experimental conditions
- -Compatibility: Integrates with existing Cre-driver mouse lines for flexible experimental design

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Category

Research Tools/Biological Materials/Mouse

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References

 Sanz, E., Yang, L., Su, T., Morris, D. R., McKnight, G. S., Amieux, P. S.(2009), https://www.pnas.org/doi/full/10.1073/pnas.0907143106, https://www.pnas.org/, 106, 13939-13944