## Identification of Autophagy-related miRNA-mRNA Regulatory Network in Calorie-restricted Mouse Brain



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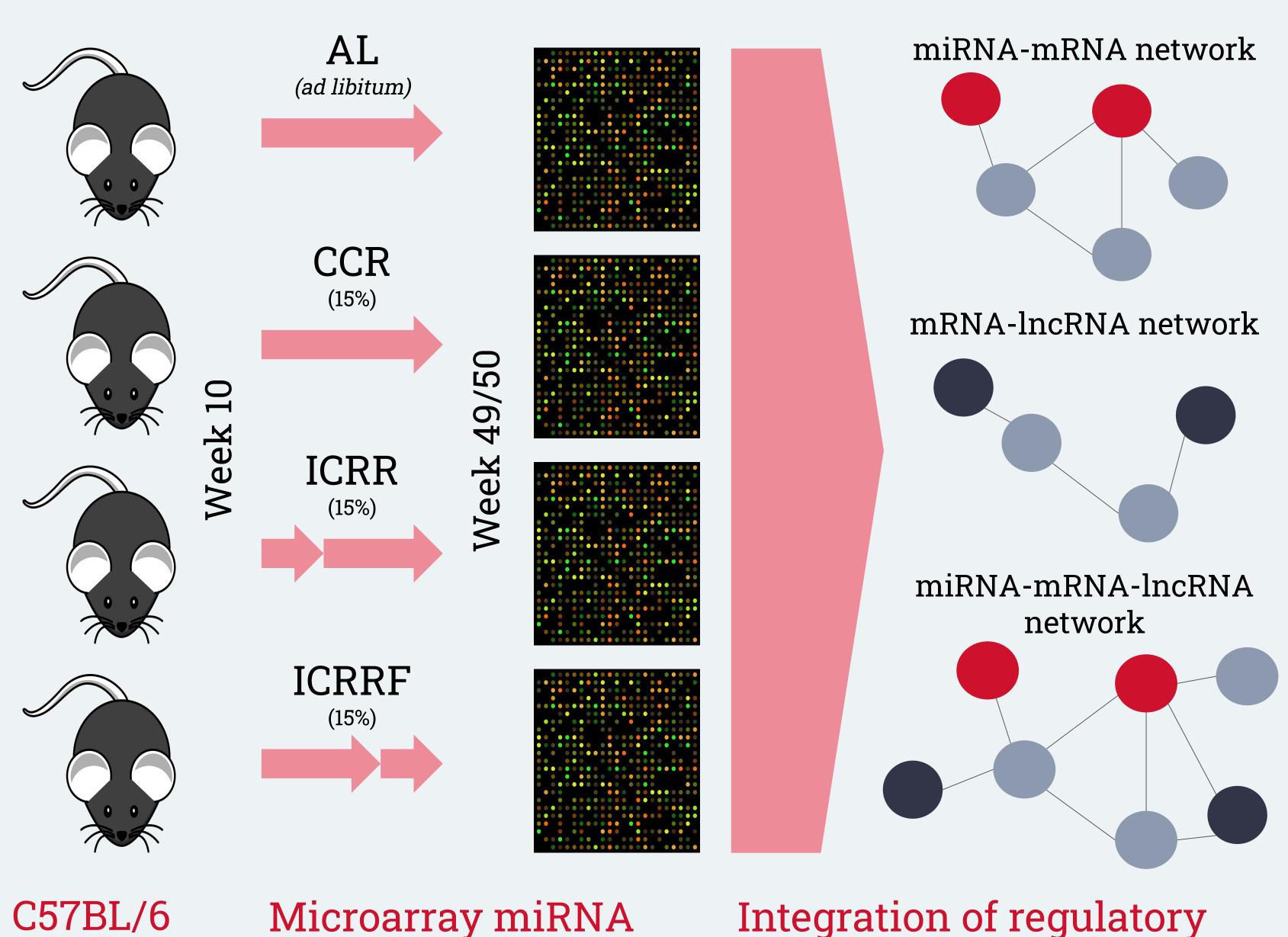
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## Background

- Research on autophagy as a key regulator of neurodegeneration has increased recently.
- Caloric restriction (CR) is an anti-aging regimen that stimulates autophagy.
- Complete understanding of miRNA expression change following CR could reveal how calorie restriction prevents neurodegeneration via autophagy.

## Methodology

mice



networks

profile after dieting

- Results Gm5802 ULK2 mmu-miR-380-3p Gm42430 Ttc39aos1 Gm42418 Rps19-ps10 mmu-miR-101b-3p Gm9816 Adh6-ps1 Gm38619 mmu-miR-137-3p Gm48027 Gm42418 PRKAA2 Gm4959 Gm15564 Gm12538 Gm2999 Tubb4b-ps1 mmu-miR-670-5p Gm8539 Gm8116 Gm7658 Gm48027 Gm2691 mmu-miR-7652-5p
- 1. Through the integrated analysis, we identified 8 miRNA-mRNA pairs, and 36 lncRNA-miRNA pairs.
- 2. Gm15564, miR137/670, PRKA1/2 axis is the most central subnetwork.
- 3. Using mirGen, we discovered that miRNAs targeting autophagy-related genes had the greatest impact on glioma and MAPK signaling pathways.

## Conclusion

1. We show that a lncRNA-miRNA-target gene regulation network is involved in the reversal of neurodegeneration in the mouse brain.