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

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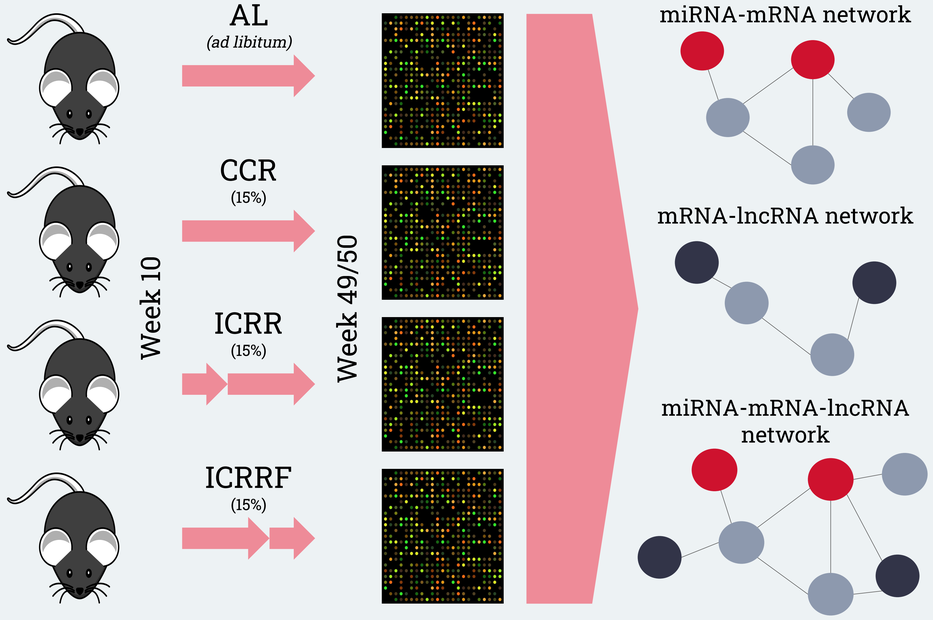
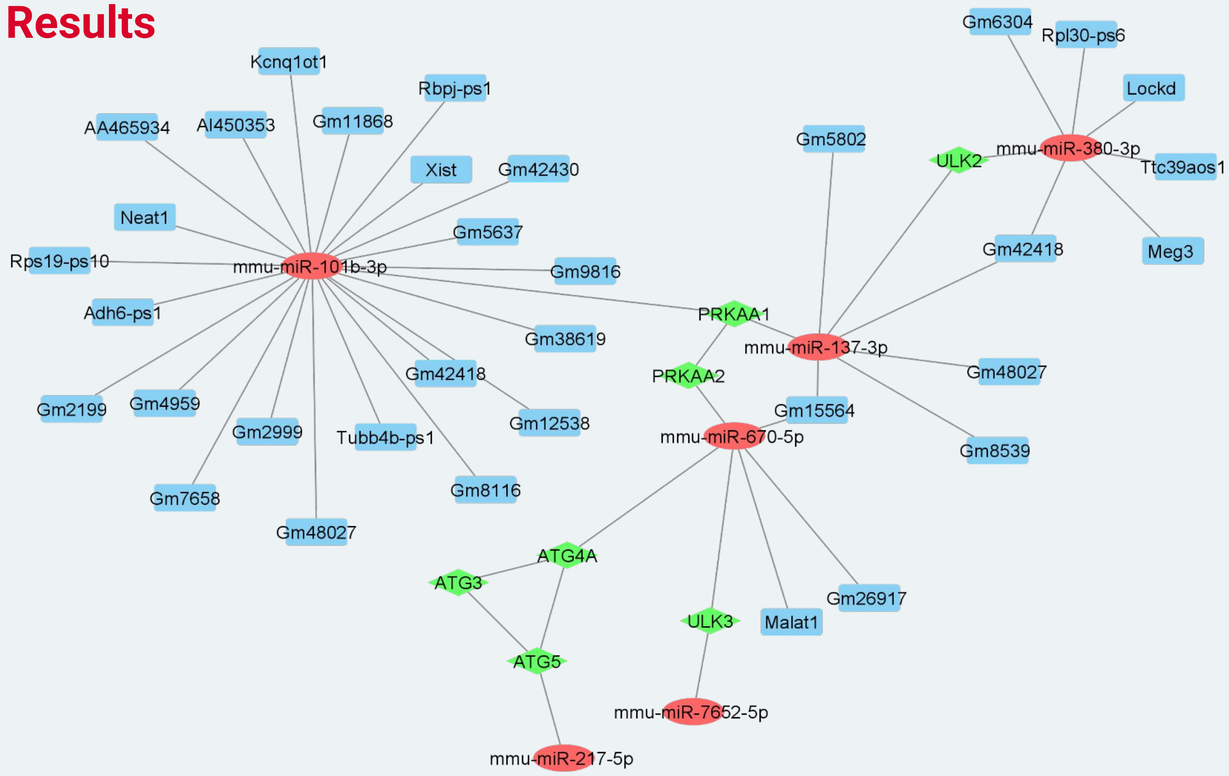
Background

- 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



Results



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.