



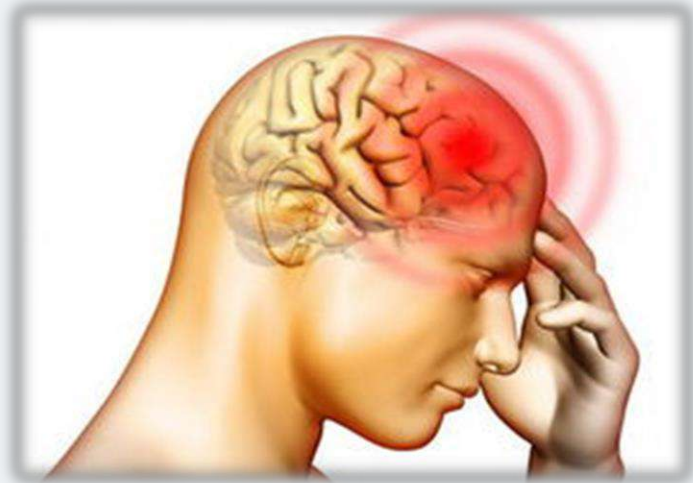
Trans-10-hydroxy-2-decenoic acid protects against LPS-induced neuroinflammation through FOXO1-mediated activation of autophagy

Meng-Meng You, Jing Tian, Fu-Liang Hu*

College of Animal Sciences, Zhejiang University, Hangzhou, P.R.China

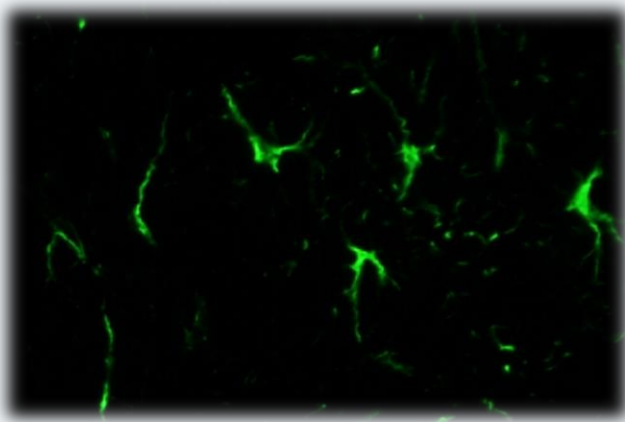
2019-9-11





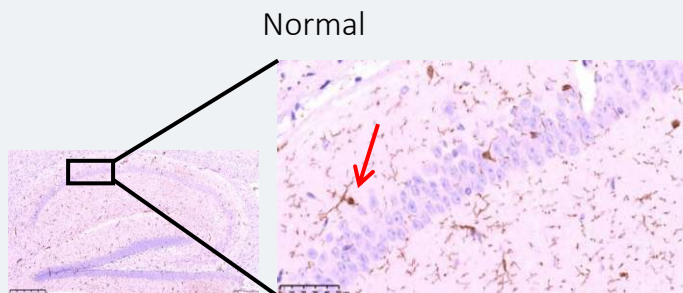
NEUROINFLAMMATION

Neuroinflammation refers to inflammation happening in the brain, and it acts as a key feature in various neurodegenerative diseases, including Alzheimer's disease (AD) and Parkinson's disease (PD) .



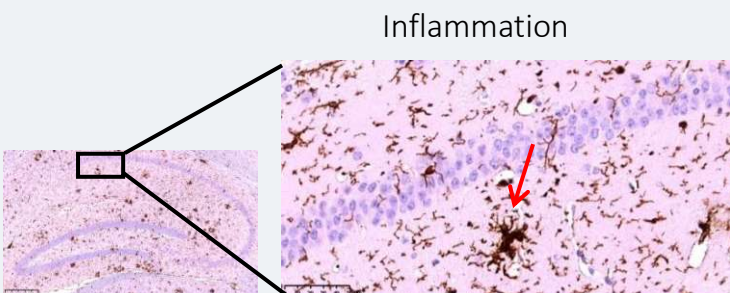
MICROGLIA

Microglia, a type of macrophage, regulate the homeostasis of the central nervous system.



Normal

Neurotrophic



Inflammation

Cytotoxic

→

Cytokines
Chemokines
Nitrite oxide
.....



Nonsteroidal anti-inflammatory drugs (NSAIDs)



NSAIDs

Aspirin, Naproxen,
Ibuprofen, Nimesulide,
Rofecoxib.....



Side effect of NSAIDs

Congestive Heart Failure,
Gastrointestinal Damage,
Hypersensitivity, Chronic kidney
disease



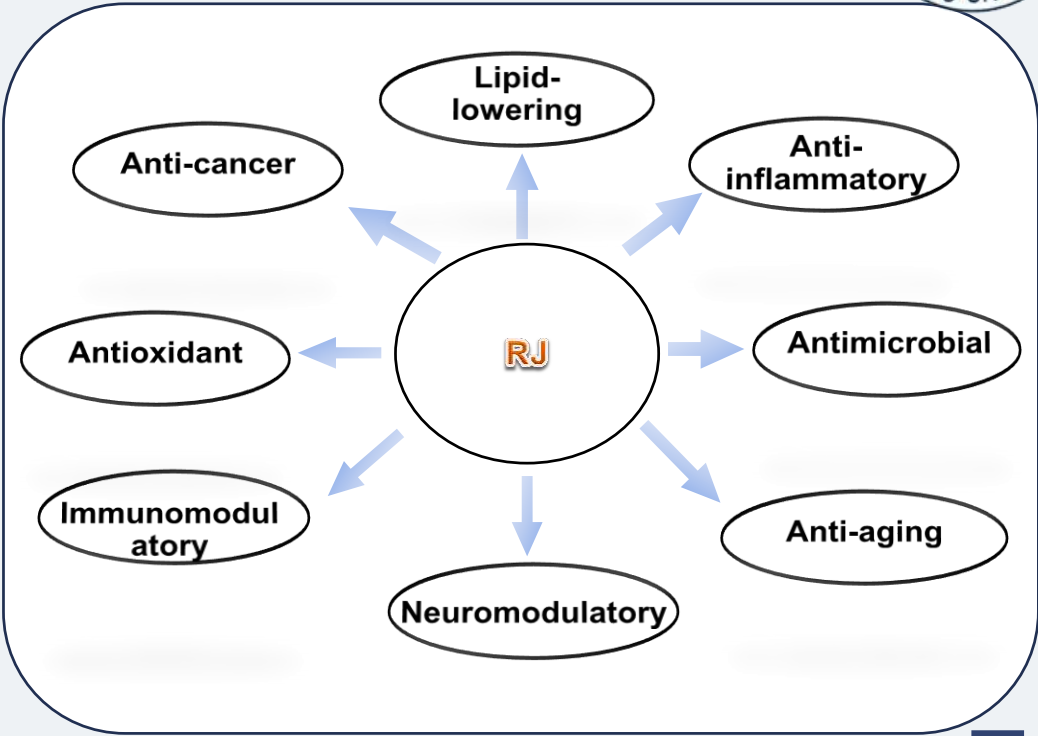
Other

Functional foods

Background and significance of the Research



Royal jelly (RJ) is a secretion of honeybee hypopharynx and mandibular salivary glands. It is a white-yellowish, gelatinous, acidic colloid.



The lab of bee science, Zhejiang University



Research Article

Royal Jelly Attenuates LPS-Induced Inflammation in BV-2 Microglial Cells through Modulating NF-κB and p38/JNK Signaling Pathways

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Research Article

***In Vitro* Anti-Inflammatory Effects of Three Fatty Acids from Royal Jelly**

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10-HDA

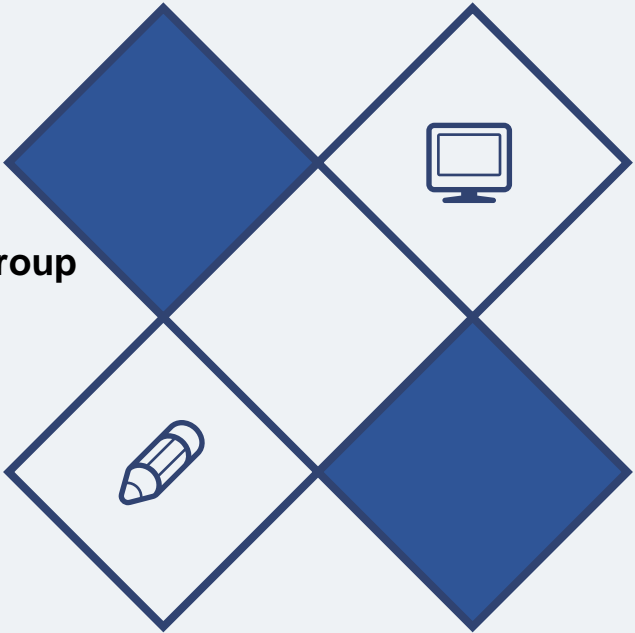




Group

In vivo

- Control group
- LPS (5 mg) group
- 10-HDA (100 mg/kg/d) + LPS group
- 10-HDA (100 mg/kg/d) group



Group

In vitro

- Control group
- LPS (1 ug/mL) group
- 10-HDA (1 mM)+LPS group
- 10-HDA (2 mM)+LPS group
- 10-HDA (4 mM)+LPS group

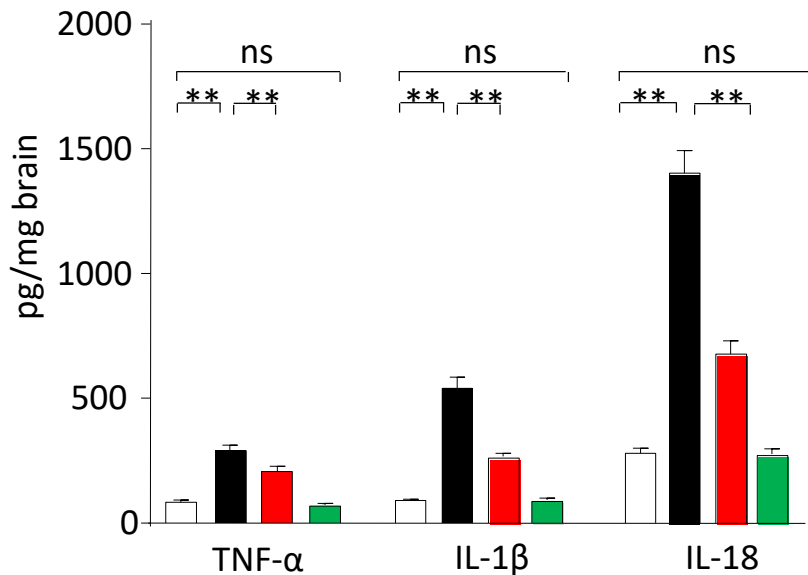
Research Results 1. Effect of 10-HDA on LPS-induced neuroinflammation in C57BL/6 mice



a

b

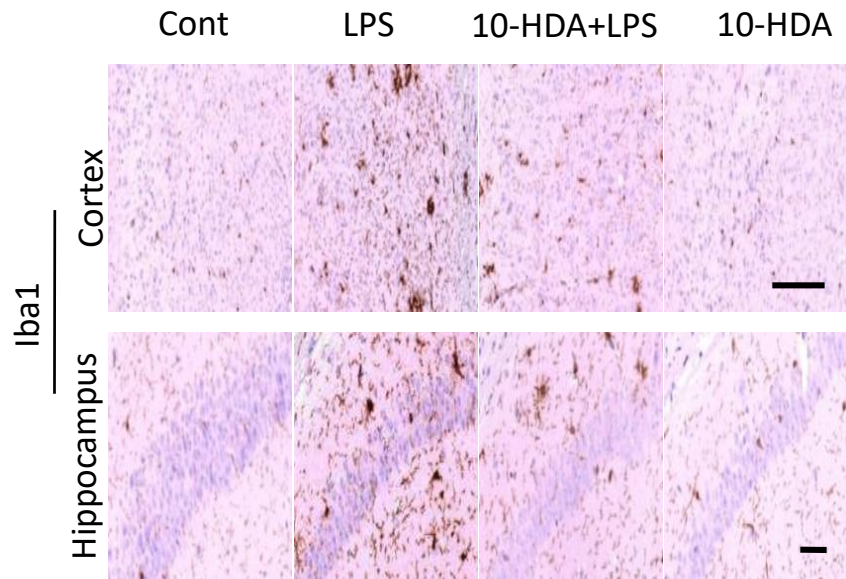
□ Cont ■ 10-HDA+LPS
■ LPS ■ 10-HDA



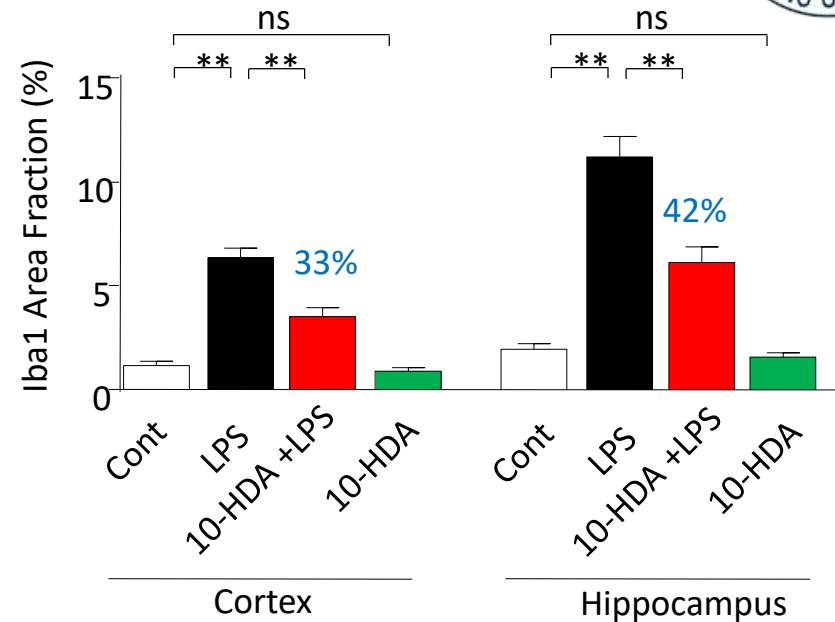
1. Effect of 10-HDA on LPS-induced neuroinflammation in C57BL/6 mice



b



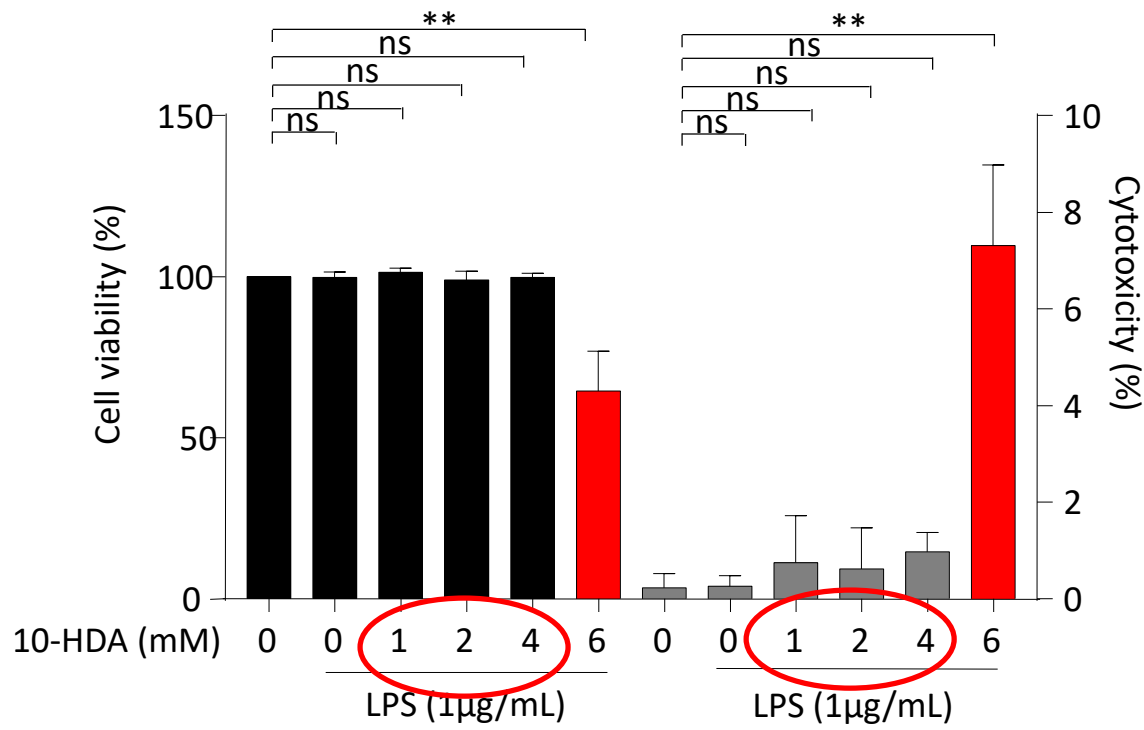
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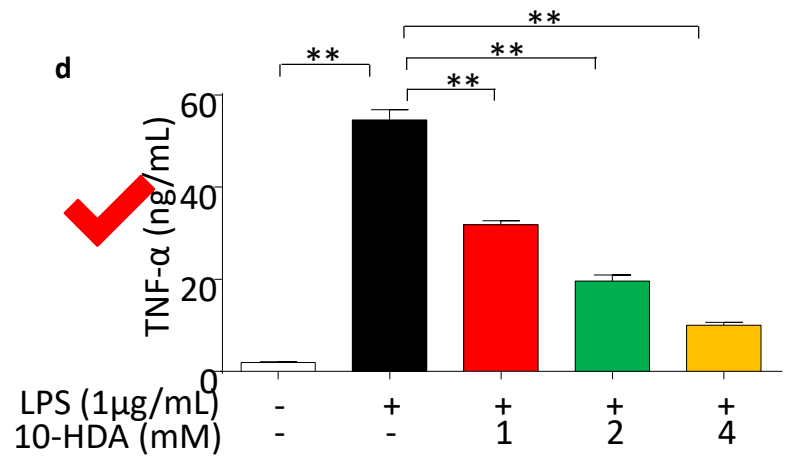
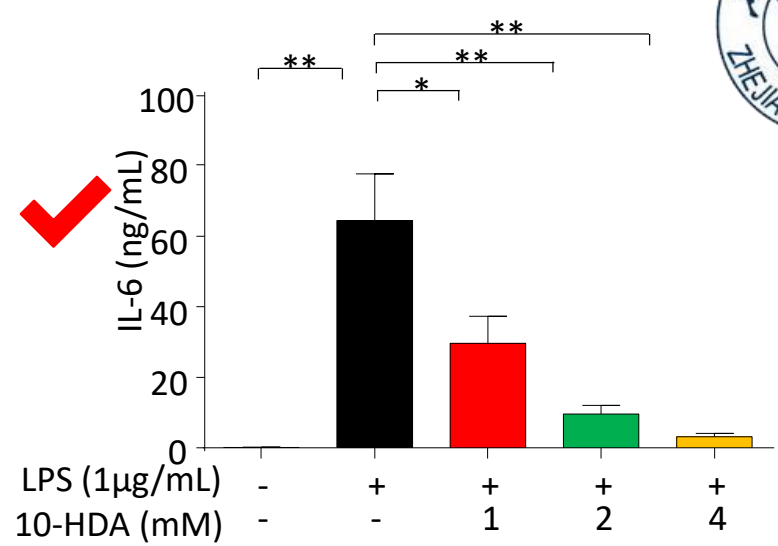
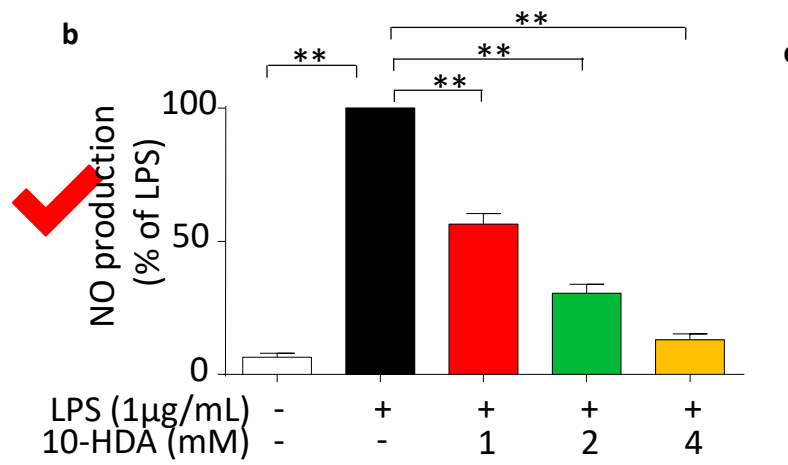
2. Effect of 10-HDA on LPS-induced neuroinflammation in BV-2 cells



a

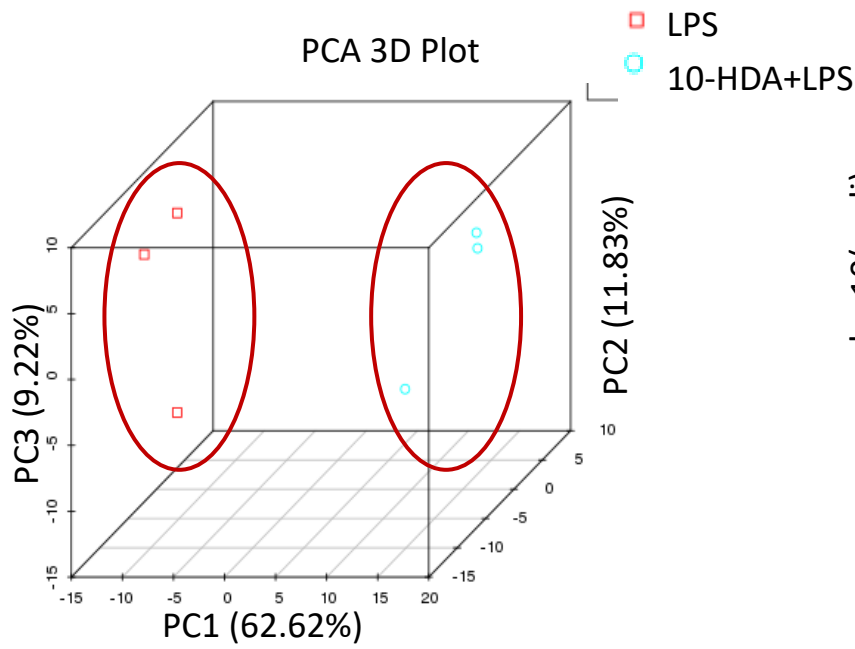


2. Effect of 10-HDA on LPS-induced neuroinflammation in BV-2 cells

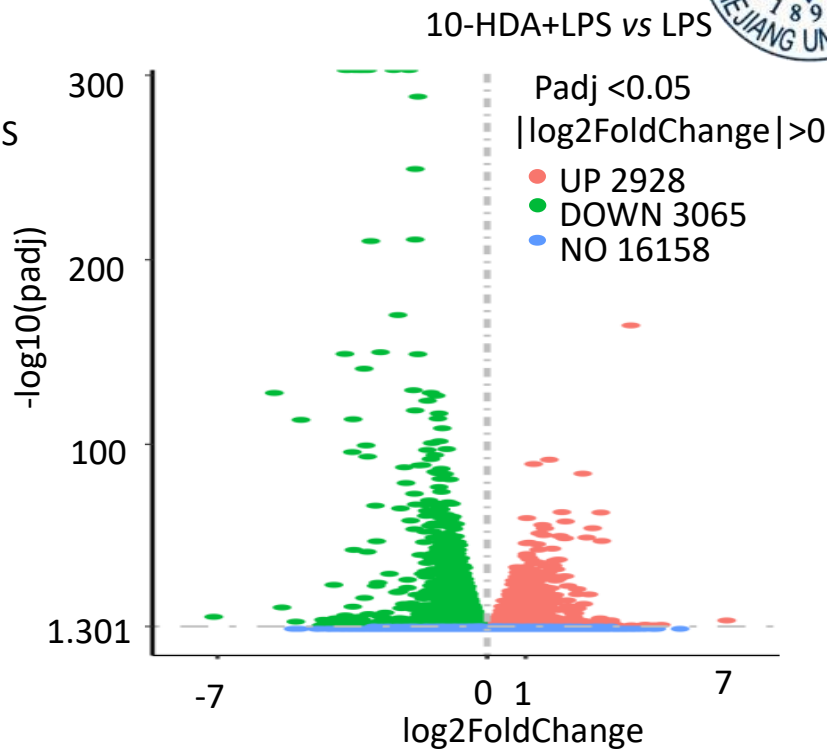




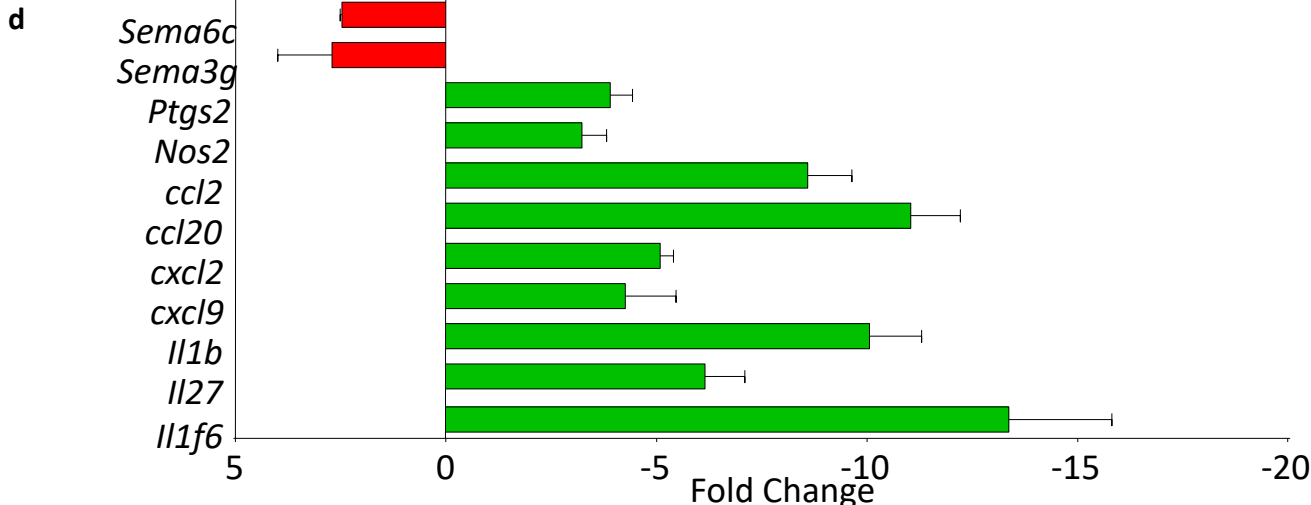
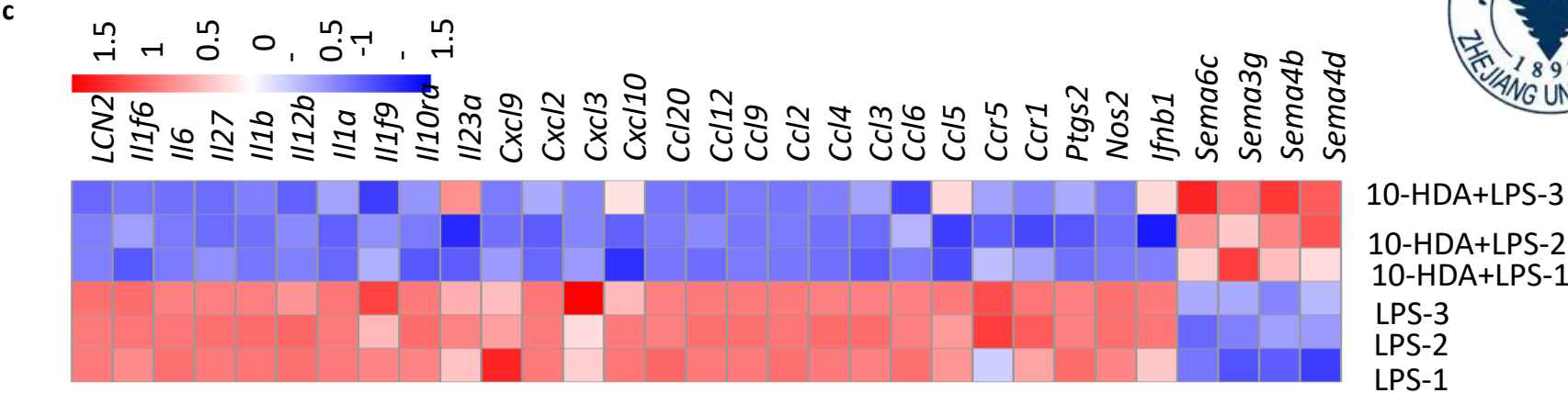
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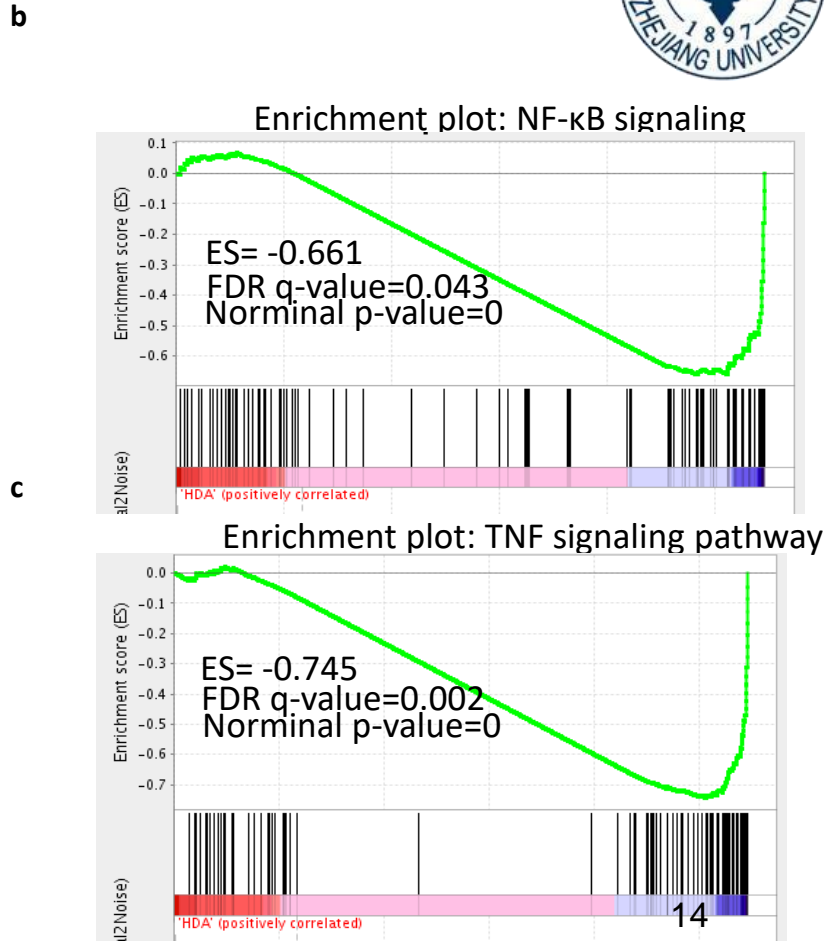
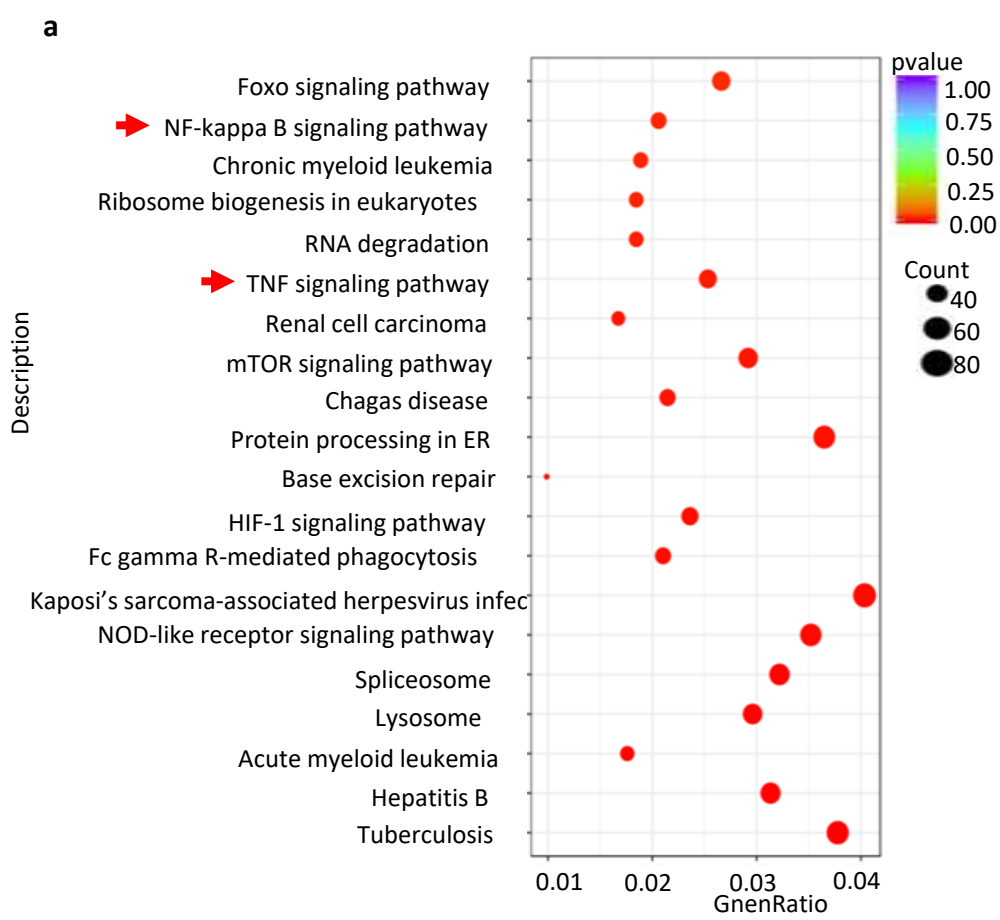


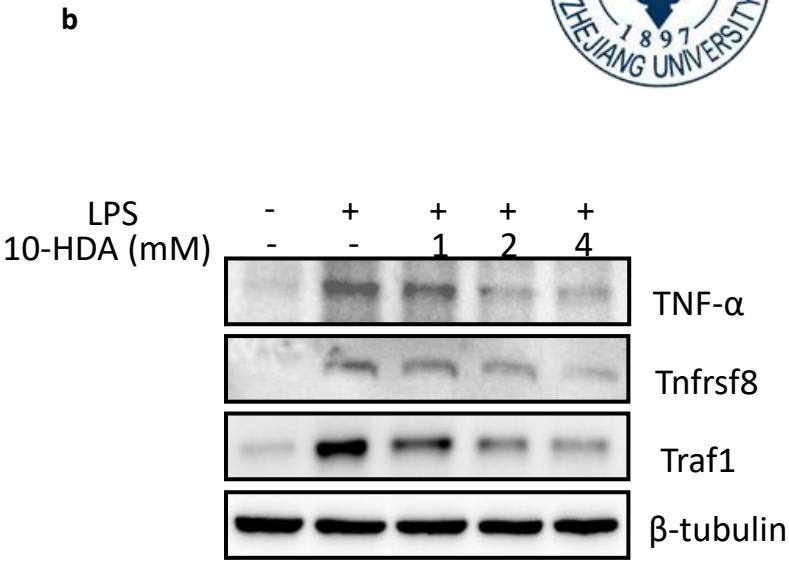
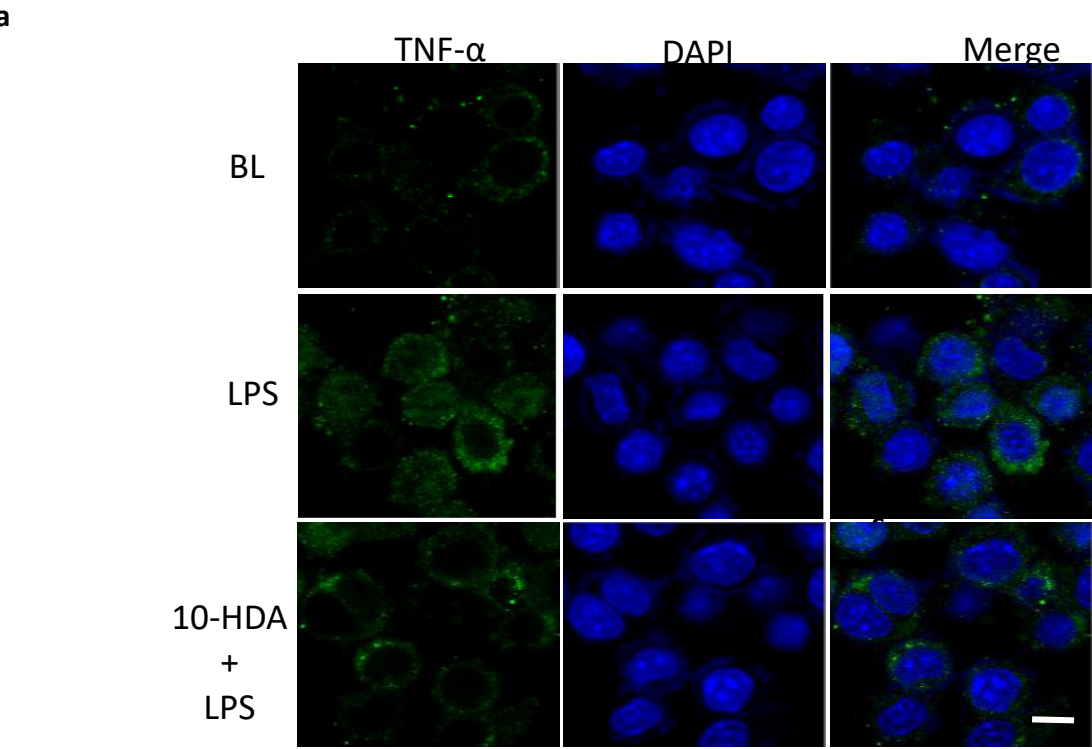
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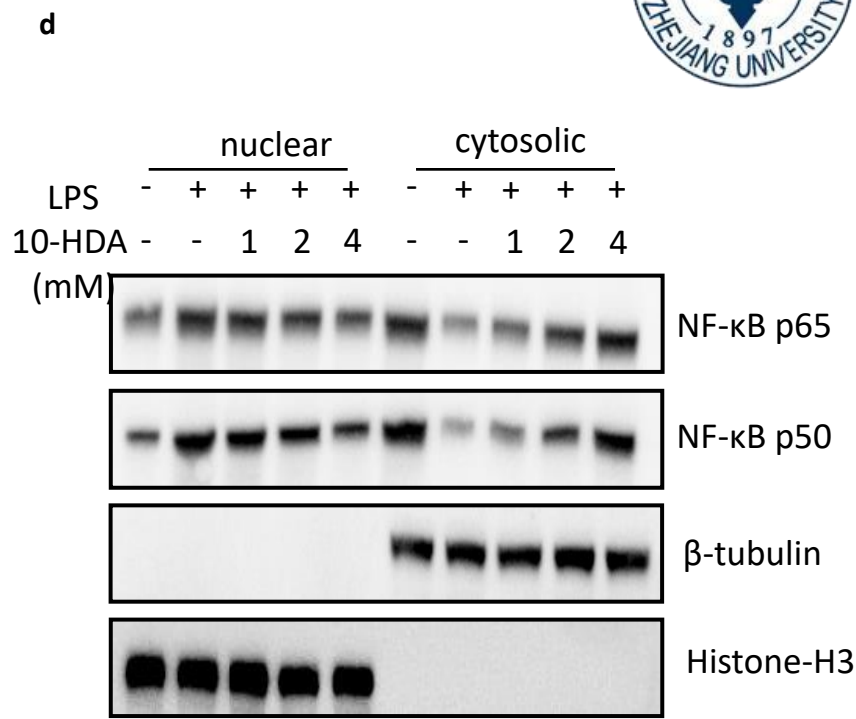
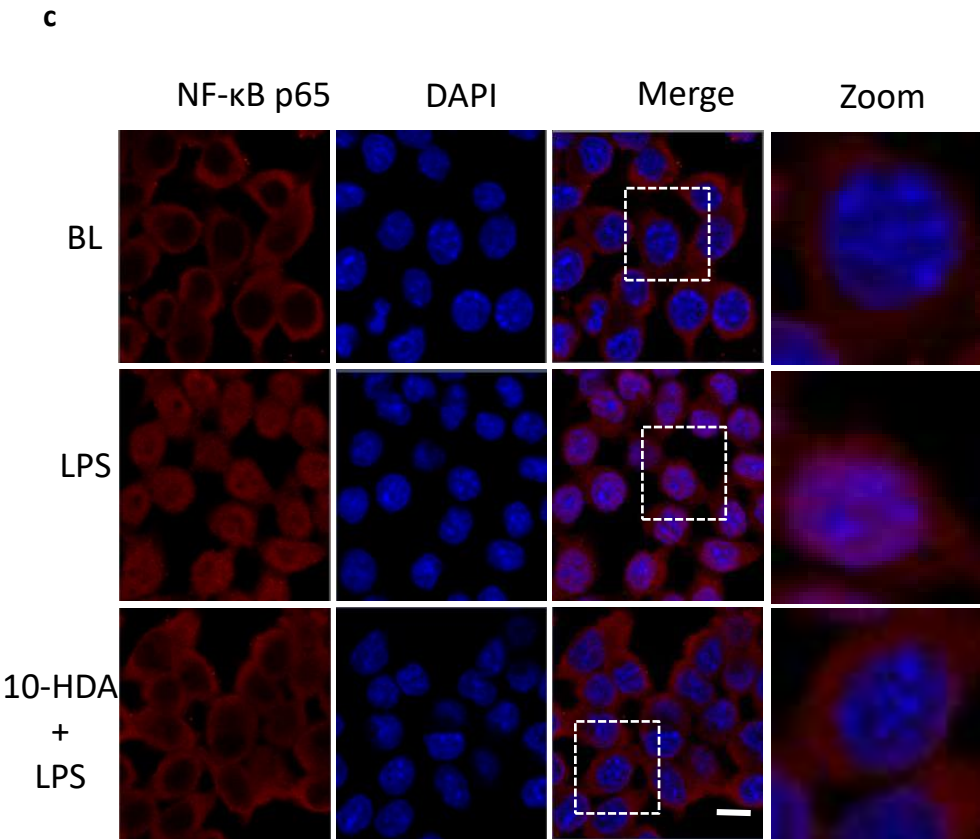


Research Results 3. Reprogramming of microglial gene expression after 10-HDA treatment





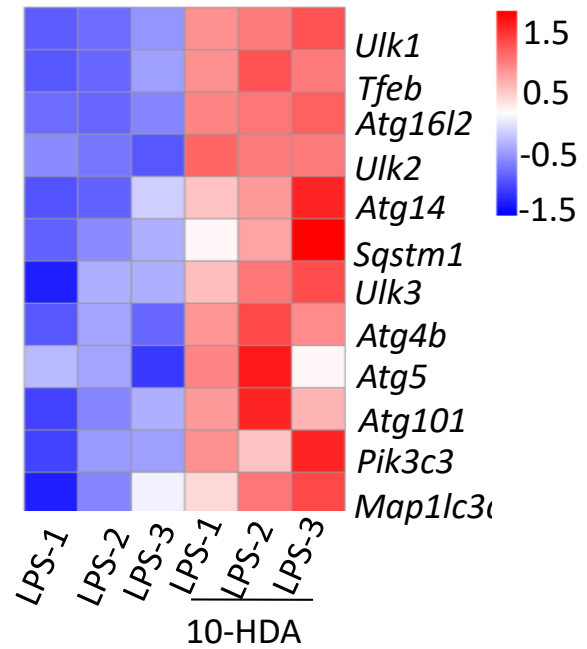




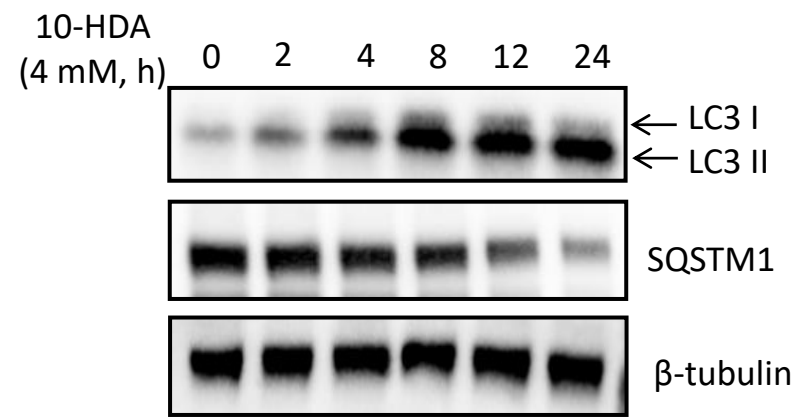
Research Results 5. 10-HDA ameliorates neuroinflammation via autophagy induction



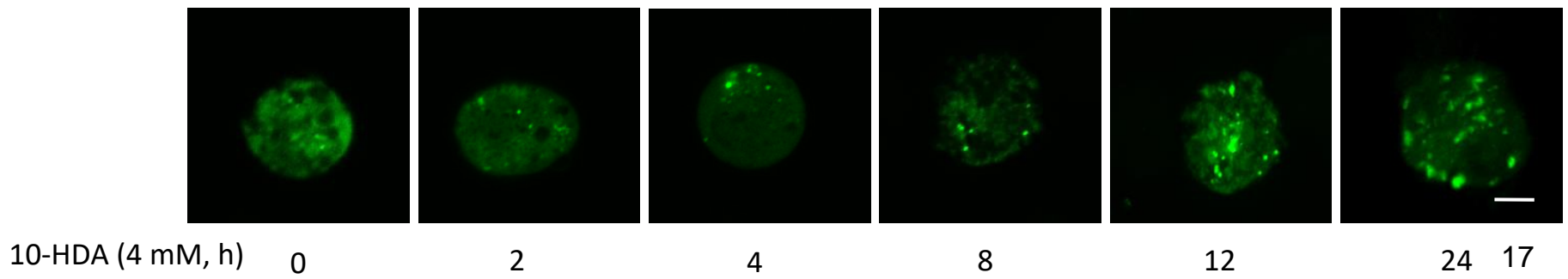
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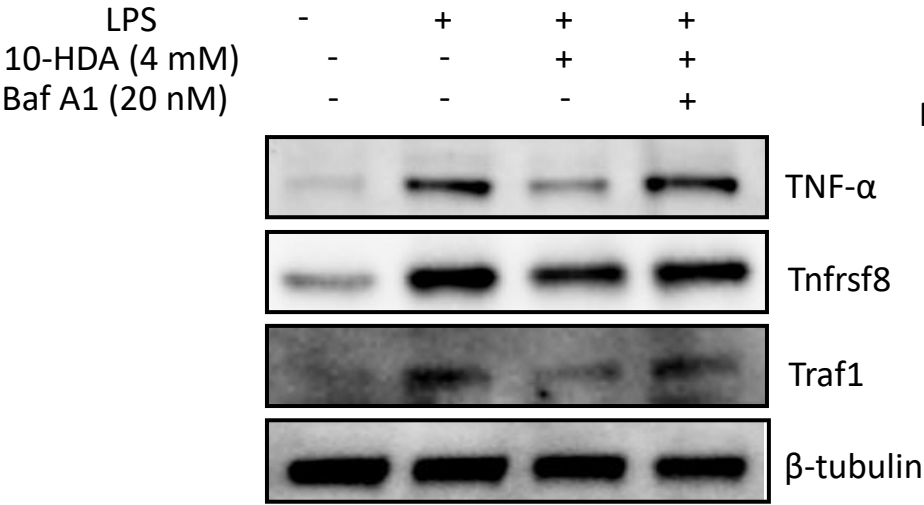


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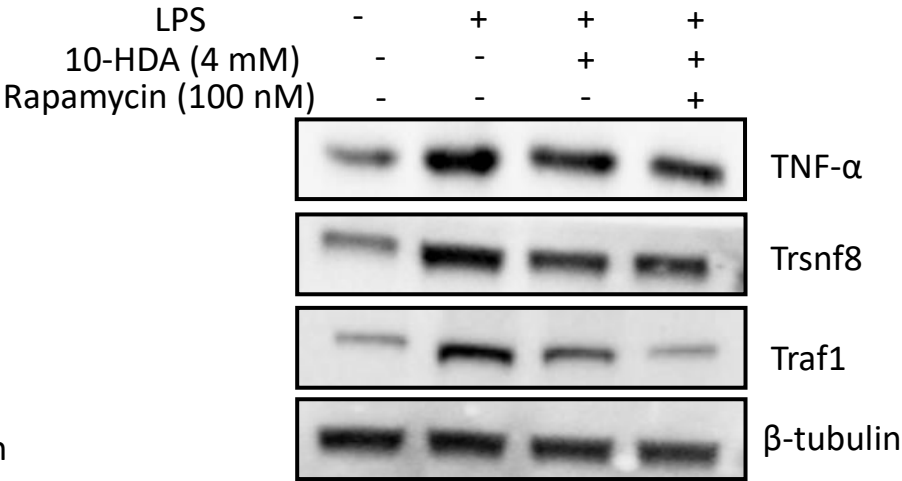




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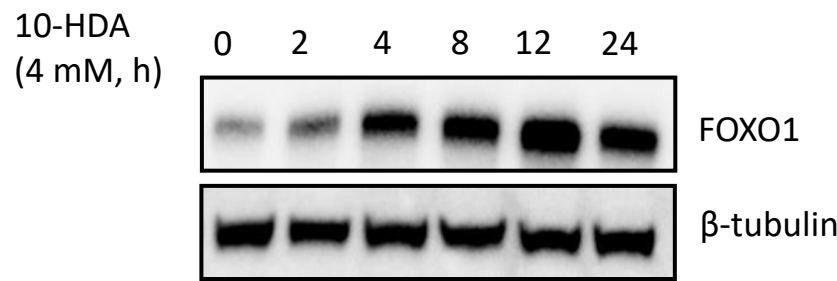


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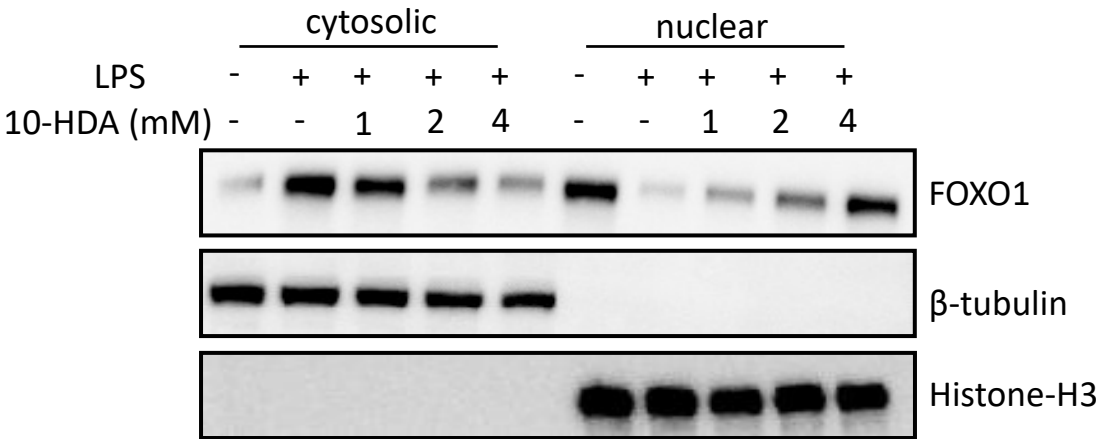




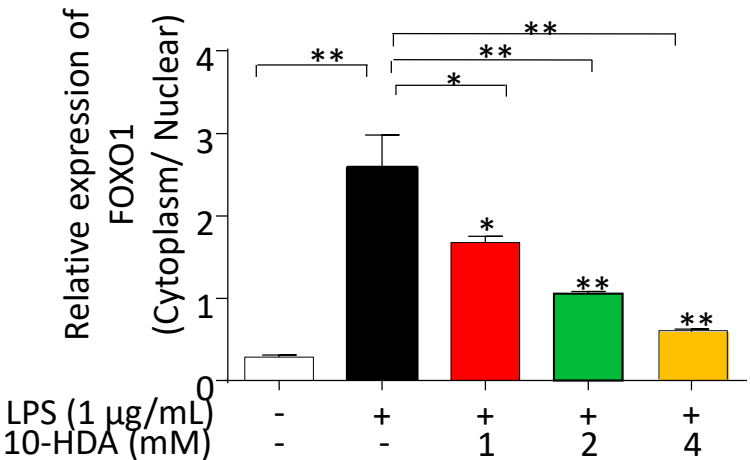
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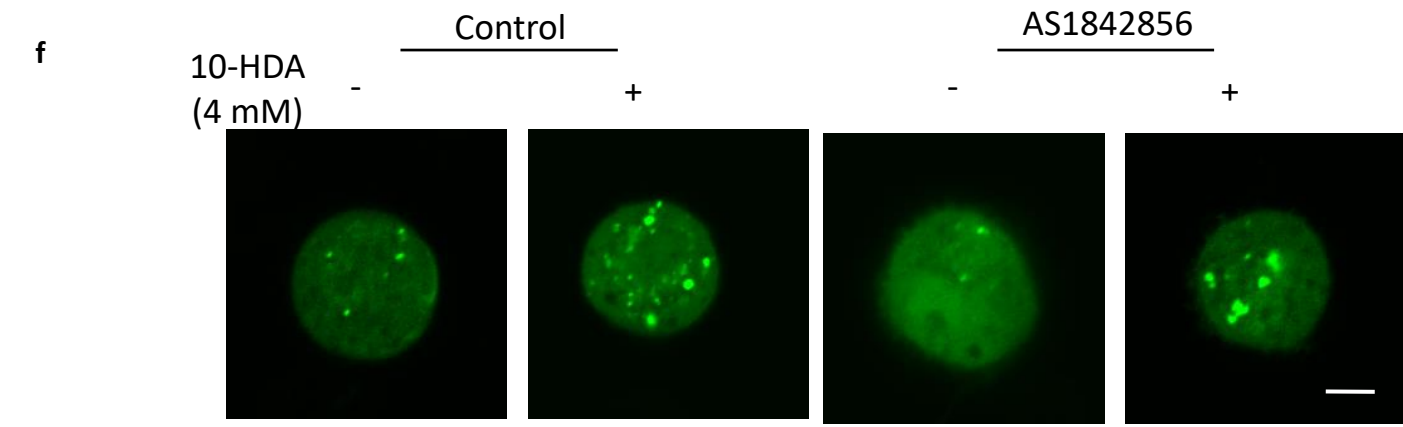
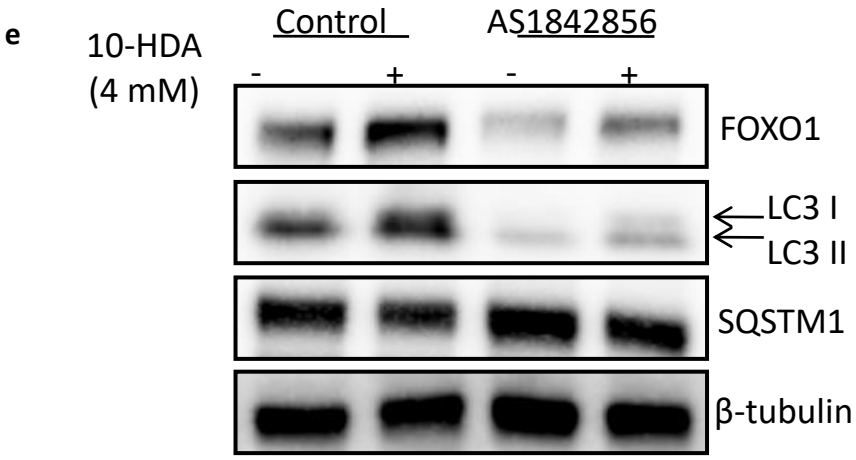


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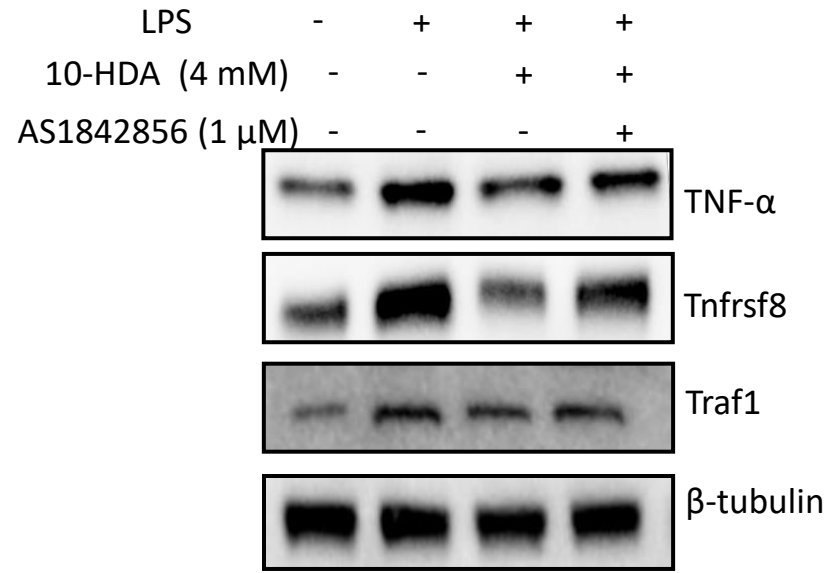
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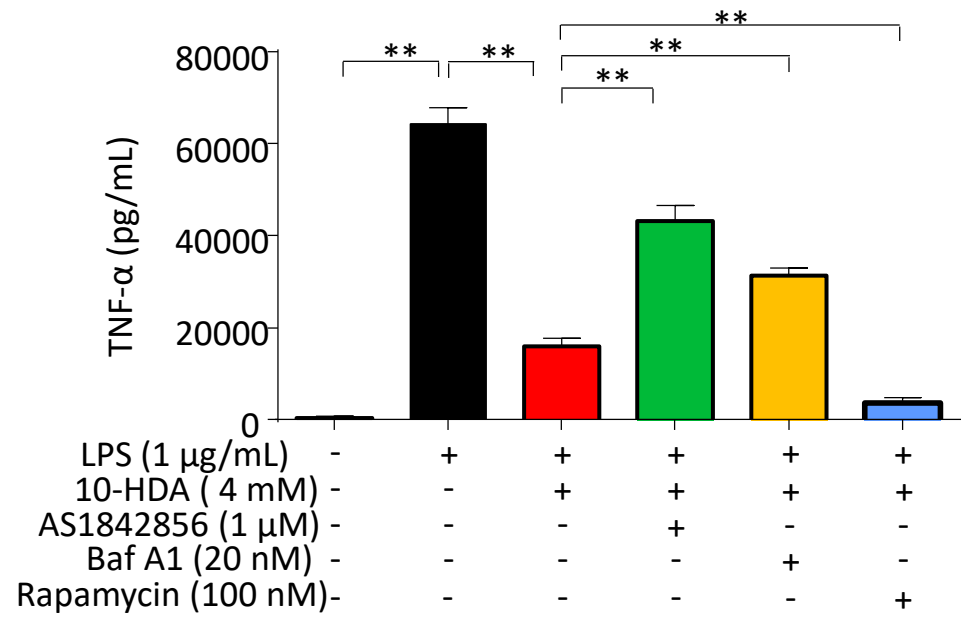


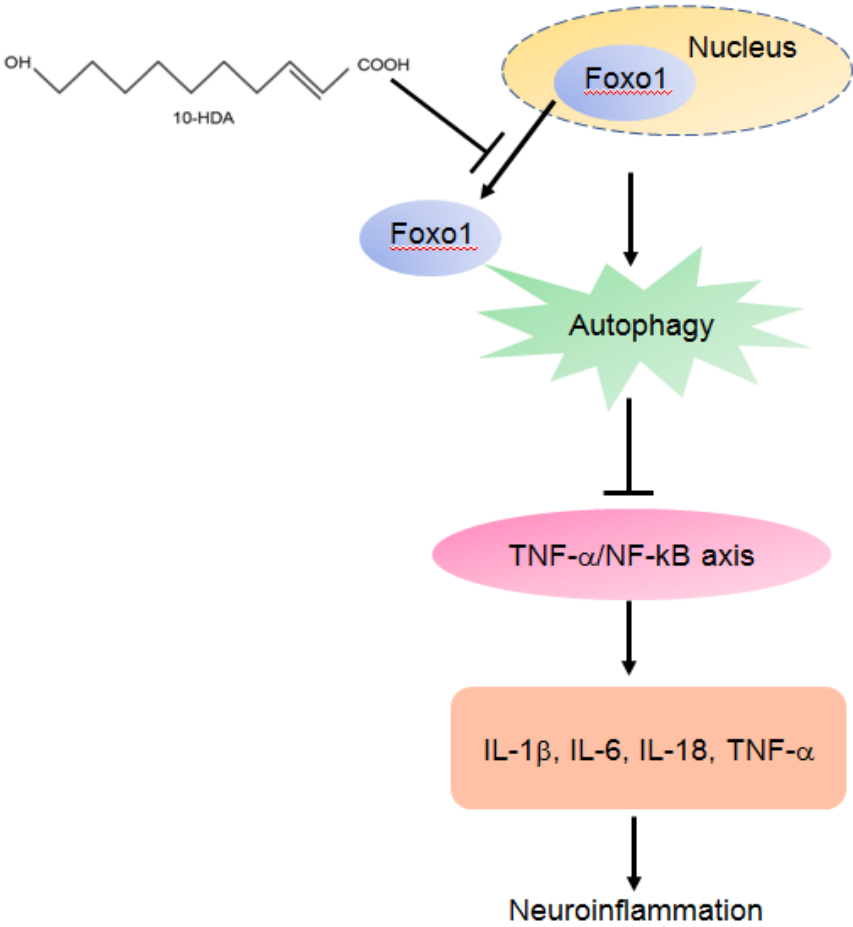


g



h





10-HDA may act as a promising **autophagy activator** for the treatment of neuroinflammation-related diseases.



Lab of Bee Science ZJU



Thanks for the financial support for the trip by Wuhan Baochun royal jelly co., Ltd.

