

# The effects of EM1 on LPS Activated Microglia

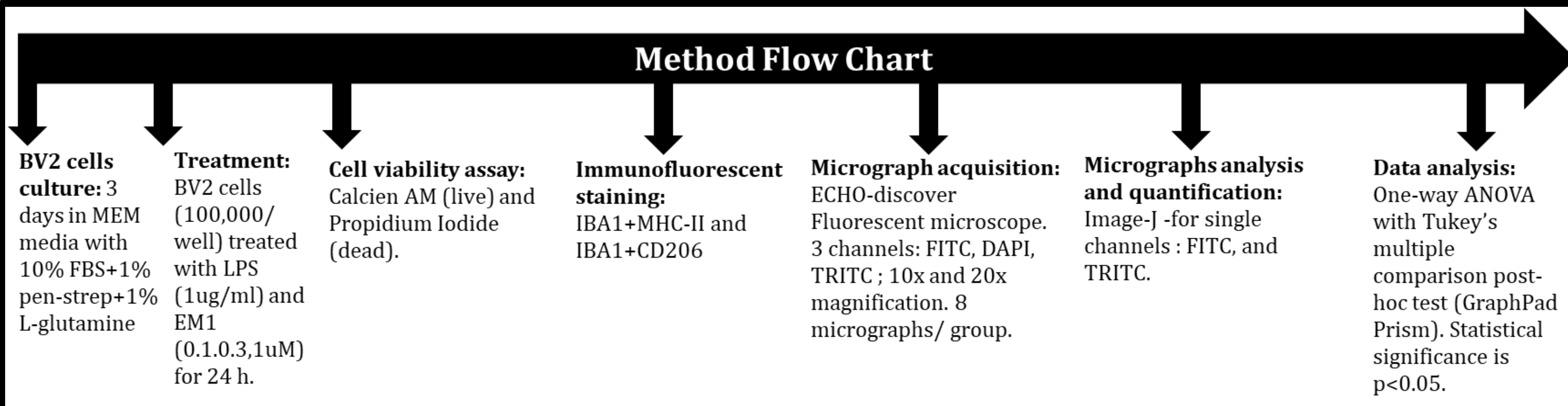
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## Introduction

- ❖ Gut dysbiosis defines the imbalance between health promoting and pathogenic bacteria as observed in obesity.
- ❖ Gut dysbiosis results in “leaky gut”, allowing bacteria and its endotoxins into bloodstream.
- ❖ Lipopolysaccharide (LPS) is the main endotoxin of Gram-negative bacteria increased in blood due to gut dysbiosis.
- ❖ In the brain, LPS activates microglia and transforms it from anti-inflammatory to pro-inflammatory state.
- ❖ Exercise has been linked to improved gut health and decreased pro-inflammatory state.
- ❖ We tested whether a novel exercise metabolite (EM1) shown to decrease appetite in obese mice will decrease pro-inflammation in cultured microglia.

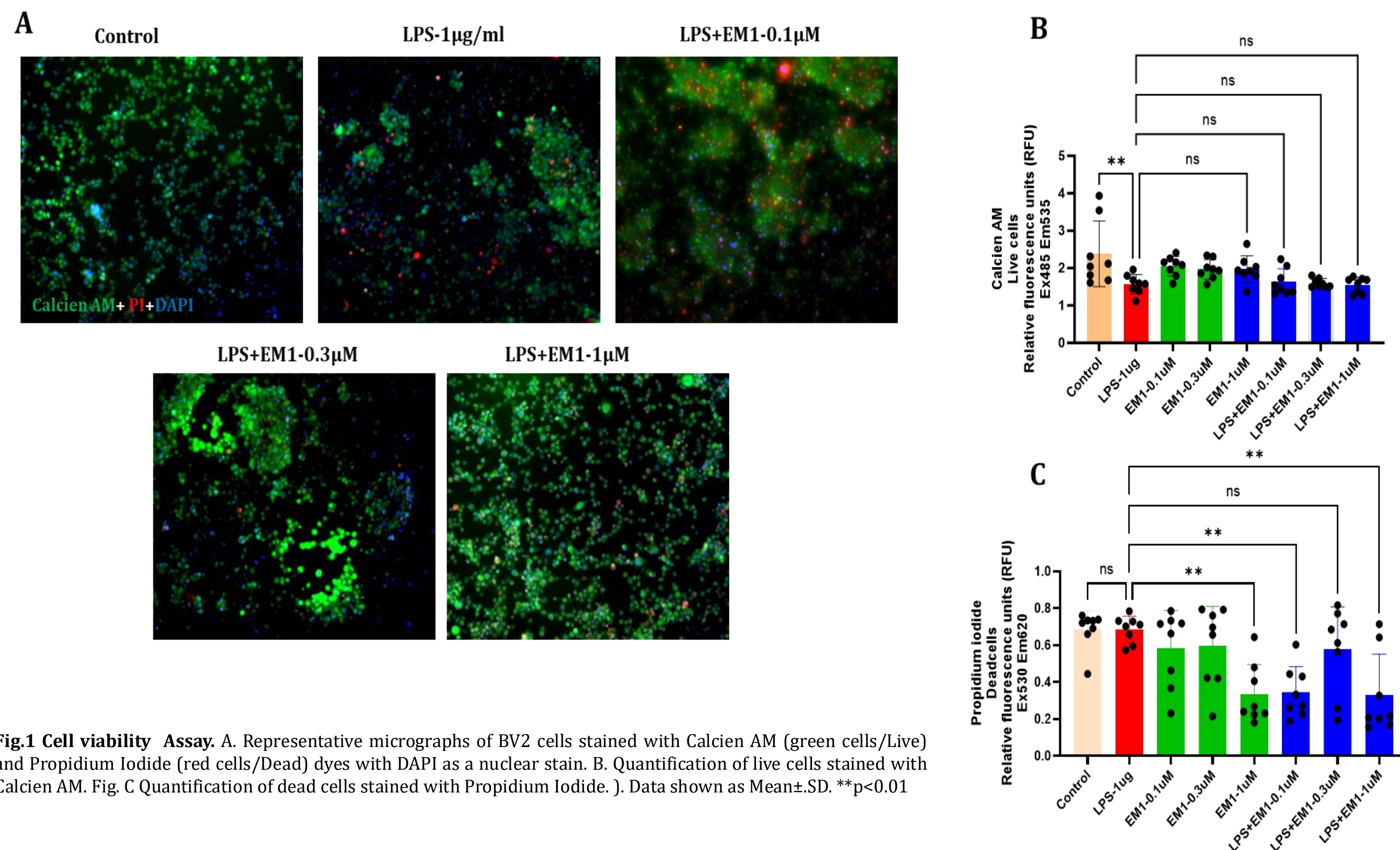
**Hypothesis:** EM1 will decrease the expression of pro-inflammation in LPS-activated microglia.

## Method

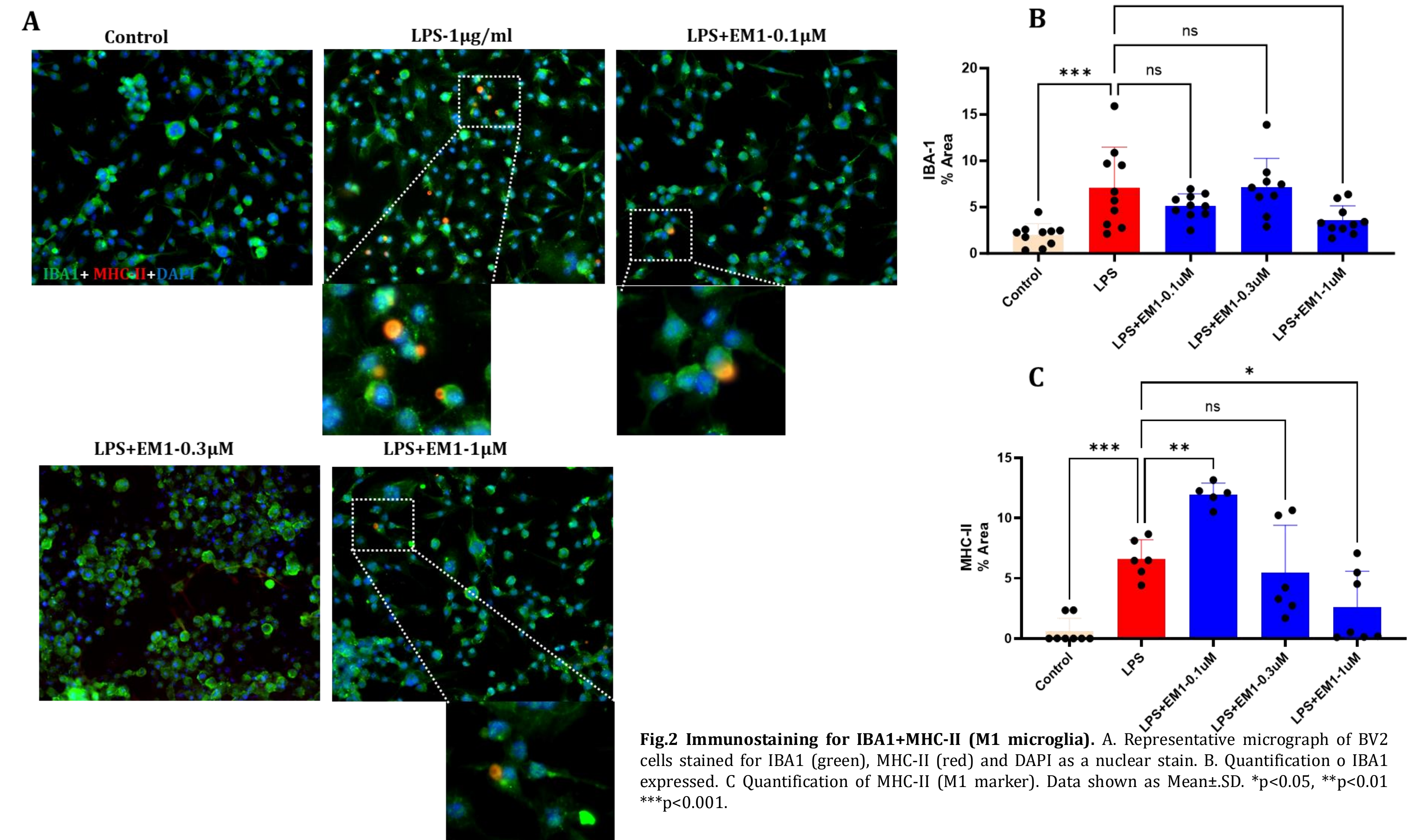


## Results

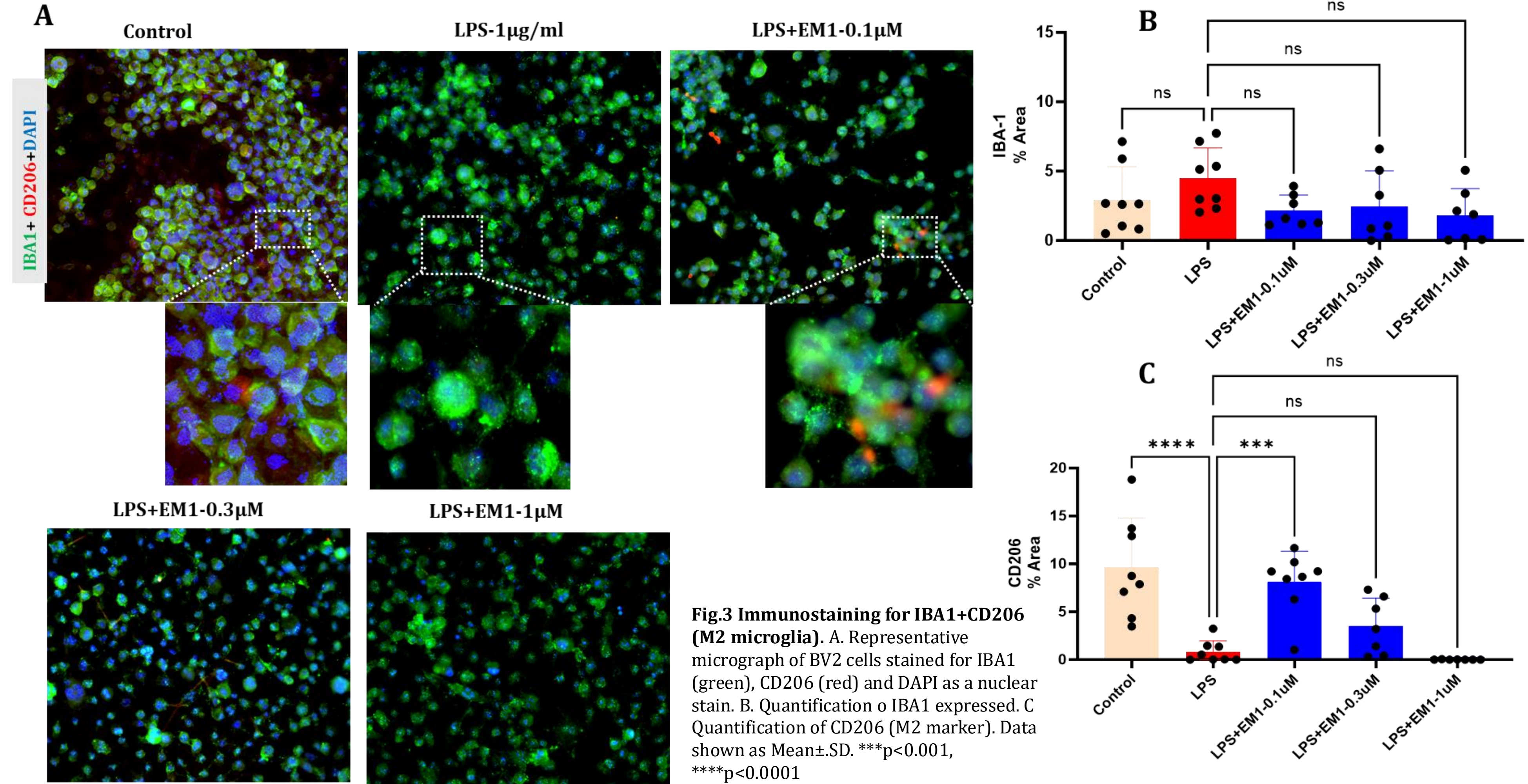
### Cell Viability Assay: EM1 1µM decreased the number of dead cells



### IBA1+MHC II: EM1 (0.1 µM) increased pro-inflammatory microglia



### IBA1+CD206: EM1 (0.1 µM) increased anti-inflammatory microglia



## Conclusion and Next Step

- ❖ EM1 (0.1 and 1 µM) significantly decreased the number of dead cells treated with LPS.
- ❖ Low dose EM1 (0.1 µM) significantly increased both anti- and pro-inflammatory microglia.
- ❖ High dose EM1 (1 µM) significantly decreased pro-inflammatory microglia.
- ❖ EM1 at 0.1 µM is ambivalent for anti- and pro-inflammatory microglia population.

### Next Logical Steps:

- ❖ To determine the effect of EM1 on inflammatory states of microglia in obese mice.