

## **Research Review Outline Submission Form**

### **TOPIC:**

The role playing of intestinal microbial dysbiosis and how it affects the progression of Alzheimer's disease.

### **Primary Research Article:**

<https://pubmed.ncbi.nlm.nih.gov/28634323/>

### **I. Introduction:**

*General outline of what will be discussed in the Introduction with at least 4 subheadings*

1. How does TNF- $\alpha$  initiate a brain inflammatory response
2. What are digestive bacterias and how is it important in regulating function and behavior related to the brain
3. What cells does *Lachnospiracea* interact with to induce inflammation
4. What happens to the brain when toll receptors are absent, and how does it progress neurodegenerative disorder

### **II. Experiments and Results:**

*General outline of the main experiments and their findings with at least 4 subheadings*

1.

Experiment: Flies were induced with dysbiosis by oral infection with enterobacteria vs a set of control flies with no infection to reveal if degeneration in the brain was occurring .

Finding: The brain of infected flies displayed an increase of vacuolar degeneration along with elevated amounts of neuronal loss in the transgenic brain vs flies with no infection had no noticeable effects.

2.

Experiment: Flies were immunostained on the brain with apoptosis markers to determine if locomotor activity were performing at high levels

Findings: Flies that had been infected were also found to have a declined level of locomotor activity influencing reduced lifespan subjected to the enteric infection. Control flies displayed a healthy level.

3.

Experiment: Analysis of AMPs was conducted to reveal was effectors were upregulated in the brain

Findings: Results indicate that flies with the infection had over-activation of antimicrobial whereas, the control flies had normal levels antimicrobial.

4.

Experiment: To examine whether the recruited hemocytes contributed to the progression of AD, genetically depleted hemocytes in the transgenic fly were conducted

Findings: Infected flies had a hemocyte deficient that reflected diminished neurodegeneration triggering the TNF pathway in the brain.

### **III. Discussion:**

*General outline should include:*

*A. a brief summary of your primary research article*

This article gives an overview of how intestinal infection aggravates inflammation in patients with AD. Suggesting that it triggers an immune perturbation in the transgenic brain.

Specifically, it investigates TNF- $\alpha$ , as one of the key inflammatory factors involved in the increased numbers of receptors that further dysregulates genetic depletion.

This source also informs that by continuous dysregulation of genetic depletion over activation of both, TNF and AMPS, are performed in the brain affecting neurodegeneration in the brain as a whole.

*B. how it compares to other research articles that have addressed the topic*

Other research articles addressed the topic by revealing the consequences to elevated levels of inflammation. Such as, the role of playing Lachnospiracea, a digestive bacteria, that if absent irregularates the function and behavior related to the brain. Additional articles reveal the function of two cells: microglia and astrocytes, that when activated consequent to neuroinflammation, causes an excess of accumulation that then damages the BBB and affects the neuronal integrity and function that contributes to the neurodegeneration. Also another article then explains the importance of toll receptors when it comes to recognizing A $\beta$ 42.

*C. Future experiments that you would suggest*

Testing mice, as they have similar genomes to humans to reveal if the same results are obtained from the ones of the fly.

*D. Ethical considerations*

Ethical consideration are steps that ensure that no subject is harmed and accounts of morals for each individual.

Flies used for experiment were anesthetized prior to being induced with a bacteria, Results of the experiment were strictly based on observation from the treated flies.