



NATHAN SHOCK CENTERS  
OF EXCELLENCE IN THE  
BASIC BIOLOGY OF AGING

# PILOT AWARDEE SPOTLIGHT



## Kailiang Jia, PhD

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**2021 Oklahoma NSC Pilot Award**

*Identification of novel genes involved in C. elegans food signaling by RNA-seq*

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### How did you become interested in aging?

Aging is a high risk factor for many human diseases. I believe the understanding of aging at the molecular level will lead to the discovery of new therapeutic targets to treat age-related human diseases.

### Briefly describe your project in non-scientific terms. What questions are you trying to answer?

Dietary restriction can slow down the aging process. However, it is not fully understood how the food nutrients are detected and, in turn, affect the aging process. We use model animals to identify receptor proteins that respond to food nutrients at olfactory and gustatory neurons, which will elucidate how food information is processed during aging.

### What previous research or experience informed the development of this proposal?

It has been reported that destruction of olfactory and gustatory neurons or mutation of odorant receptors can extend lifespan of model animals in a mechanism similar to that of dietary restriction. My lab also discovered a neuronal receptor protein used to detect food nutrients in *C. elegans*, an aging model organism. Mutations of this receptor protein influence the aging process.

### What's exciting about your project's potential impact?

I anticipate identifying chemicals that can modify the function of the receptor protein, which slows down the aging process by mimicking dietary restriction.

### If your project is successful, what is the next step?

We will screen chemicals that can influence the function of the receptor protein and effectively slow down the aging process, which will ultimately lead to the discovery of medicines to treat aging-related human diseases.

### How has support from and collaboration with the NSCs helped further this project and/or your research overall?

To understand the molecular mechanisms by which the neuronal receptor mediates the effect of dietary restriction on aging, we will use RNA-seq to identify genes that function downstream of the receptor to transduce the food signals. The collaboration with genomics scientists from the Oklahoma Nathan Shock Centers will help us to achieve this goal.