Faculty Member Contact Information

Name	Kyong-Sup Yoon, PhD
Contact Info	
SIUE Email	kyoon@siue.edu
Campus Box	1099
Department	Enviornmental Sciences

1 Funded, 1-2 Unfunded URCA Assistant(s)

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

- Yes

How many hours per week will your student(s) be required to work in this position?
(Minimum is 6 hours per week; typical is 9)

- 6-9

Will it be possible for your student(s) to earn course credit?

- Yes, in BIOL493, ENSC499 for 1 credit hours.

Location of research/creative activities:

- SW2120

Brief description of the nature of the research/creative activity?

- Characterization of perfluorooctane sulfonate toxicity in Drosophila melanogaster and Schmidtea mediterranea Perfluorooctane sulfonate (PFOS), one of the environmentally ubiquitous and persistent polyfluorinated compounds (PFCs), is an anthropogenic pollutant. A growing body of evidence clearly shows that humans, including newborn babies fed with breastmilk, are frequently exposed to PFCs through dietary intake. The half-life of PFOS in humans is surprisingly longer (~5.4 years) than that in other animals (e.g., 17-19 days in mice). Additionally, epidemiological investigations have demonstrated significant correlations between exposures to PFCs, including PFOS, and neurological disorders, such as reduced spatial learning and memory ability and attention deficit/hyperactivity disorder. While the exact mechanisms how PFOS and other PFCs elicit the neurological disorders are not clear to date, several groups of researchers have

suggested that increased level of intracellular Ca2+ in neurons may cause apparent neurotoxicity in animal and cell culture models. We have found that fruit flies exposed to sublethal concentrations of PFOS (0, 0.02, 0.2, 2, 20, & 200 nM) showed significantly decreased daytime activity at 0.2 nM and significantly increased the daytime activity at 200 nM (P<0.05). Planarians are currently undergoing mortality bioassay studies to determine acute mortality responses. These responses will be used to detrmine sublethal concentrations for monitoring locomotor activity as well as regenerative developmental exposure. The outcomes in this study are expected to provide behavioral evidence for further understanding PFOS neurotoxicity and its impact on fruit fly and planarian circadian rhythm.

Brief description of student responsibilities?

- Students will be responsible for participating in various research activities including fruit fly and planarian laboratory maintenance, perform fruit fly mortality bioassays, and data analysis using PoloPlus and R software.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals. What exactly should your student(s) have learned by the end of this experience?

- Students will learn fruit fly and planarian development and basic invertebrate biology through participation of fruit fly and planarian laboratory maintenance, dose-response relationship and how sublethal amounts of various chemicals alter the fly mortality caused by PFOS.

<u>Requirements of Students</u>

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

- I can make arrangements for flexible work schedule.

If the location of the research/creative activities involves off campus work, must students provide their own transportation?

- N/A. This position is for on-campus work.

Must students have taken any prerequisite classes? Please list classes and preferred grades:

- BIOL 150

Other requirements or notes to applicants: