

Faculty Member Contact Information

Name	Mina Sumita, PhD
Contact Info	
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Department	Chemistry

1 Funded, 2-3 Unfunded URCA Assistant(s)

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

- No

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)

- 9

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

- Yes, in CHEM396, CHEM496 for 2 credits credit hours.

Location of research/creative activities:

- SW2005

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

- Student will work on RNA modification or biosensor development project based on their interests in biochemistry, biophysical chemistry, or organic chemistry. They will study structural and functional effects of RNA modifications by using various biochemical and biophysical techniques, DNA/RNA aptamer identification by in vitro selection for biosensor development, or design and synthesis of unnatural modified nucleotides to study RNA biochemistry or biophysics.

Brief description of student responsibilities?

- Students will conduct a literature search, set up and conduct experiments, data analysis, and interpretation. They are also responsible for keeping all procedures and data in their lab notebook scientifically.

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?

- By the end of this experience, URCA Assistants will have developed foundational skills in biochemical research and scientific inquiry. Depending on their specific project interests in biochemistry, biophysical chemistry, or organic chemistry, students will gain hands-on experience studying the structural and functional effects of RNA modifications, identifying DNA/RNA aptamers through in vitro selection for biosensor development, or designing and synthesizing modified nucleotides to investigate RNA biochemistry and biophysics.
- Students will learn how to conduct scientific literature searches, design and carry out experiments using appropriate biochemical and biophysical techniques, and analyze and interpret experimental data. They will also develop essential research skills such as maintaining accurate and detailed laboratory notebooks, documenting procedures and results according to scientific standards, and communicating their findings.
- Overall, the experience will help students understand the research process from hypothesis development to experimental execution and data interpretation. The technical skills, analytical abilities, and research experience gained through this project will also be valuable preparation for future opportunities, including applications to graduate programs and careers in the biotechnology and pharmaceutical industries.

Requirements of Students

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:

- N/A

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

- N/A

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

- Required classes: 1 year of General Chemistry course with lab (CHEM121A/B and CHEM125A/B), 1 year of Organic Chemistry course (CHEM241A/B), and 1 semester of

Organic Chemistry lab course (CHEM245 or CHEM345) Preferred classes: One semester of Biochemistry

Other requirements or notes to applicants:

- Students should have an academic concentration in chemistry, biochemistry, biological sciences, or a related field.