



**CSUF MARC U\*STAR**  
**UNDERGRADUATE RESEARCH SCHOLARS PROGRAM**  
for  
*June 1, 2018 through May 31, 2020*



**Application Deadline: January 30, 2018 (decisions made in March)**

### APPLICANT INFORMATION

Name: \_\_\_\_\_  
Last First Middle

Date of Birth (MM/DD/YY): \_\_\_\_\_ Campus Wide ID \_\_\_\_\_

Gender:  Female  Male

U.S. Citizenship:  Yes  No (Permanent Resident No.: \_\_\_\_\_)

Current Address: \_\_\_\_\_ Permanent Address:  Same as Current Address  
\_\_\_\_\_  
\_\_\_\_\_

Telephone Home: \_\_\_\_\_ Mobile: \_\_\_\_\_

Email address: \_\_\_\_\_

Ethnicity (select all that apply):

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> American Indian/Alaskan/Native American | <input type="checkbox"/> African-American/Black     | <input type="checkbox"/> Asian-American               |
| <input type="checkbox"/> European-American                       | <input type="checkbox"/> Filipino/Filipino-American | <input type="checkbox"/> Latin/Other Spanish American |
| <input type="checkbox"/> Mexican/Mexican American                | <input type="checkbox"/> Mid Eastern-American       | <input type="checkbox"/> Pacific Islander             |
| <input type="checkbox"/> Puerto Rican                            | <input type="checkbox"/> Other: _____               |   |

Primary language spoken at home: \_\_\_\_\_

Parent's Education (Highest level completed)

- |        |   |   |                                       |                                      |
|--------|---|---|---------------------------------------|--------------------------------------|
| Father | <input type="checkbox"/> Some H.S.            | <input type="checkbox"/> H.S. Diploma/GED | <input type="checkbox"/> Some College | <input type="checkbox"/> Bachelor's  |
|        | <input type="checkbox"/> Some graduate school | <input type="checkbox"/> Masters          | <input type="checkbox"/> PhD          | <input type="checkbox"/> Other _____ |
| Mother | <input type="checkbox"/> Some H.S.            | <input type="checkbox"/> H.S. Diploma/GED | <input type="checkbox"/> Some College | <input type="checkbox"/> Bachelor's  |
|        | <input type="checkbox"/> Some graduate school | <input type="checkbox"/> Masters          | <input type="checkbox"/> PhD          | <input type="checkbox"/> Other _____ |

## CAREER OBJECTIVE INFORMATION

Advanced degree objective:  Masters  PhD  MD/PhD  PharmD/PhD  
 DDS/PhD  OD/PhD  DO/MD  Other \_\_\_\_\_

## COLLEGE INFORMATION

College/University attended: \_\_\_\_\_ Dates attended: \_\_\_\_\_

Major: \_\_\_\_\_ Units completed: \_\_\_\_\_

College/University attended: \_\_\_\_\_ Dates attended: \_\_\_\_\_

Major: \_\_\_\_\_ Units completed: \_\_\_\_\_

College/University attended: \_\_\_\_\_ Graduation date: \_\_\_\_\_

Major: \_\_\_\_\_ Degree: \_\_\_\_\_

### Current CSUF Academic Level:

Total units completed: \_\_\_\_\_

Major(s): \_\_\_\_\_ Minor(s): \_\_\_\_\_

Overall GPA: \_\_\_\_\_ Science GPA\*: \_\_\_\_\_ Fall 2017 GPA: \_\_\_\_\_

*\* Please use the GPA calculator [http://www.fullerton.edu/aac/resources/gpa\\_calculator.php](http://www.fullerton.edu/aac/resources/gpa_calculator.php)*

Date you entered CSUF (MM/YY): \_\_\_\_\_

Will you graduate in June 2020?  yes  no

If not June 2020, please indicate your expected graduation date: \_\_\_\_\_

## CURRICULUM VITAE\*

(Please provide your CV as a separate sheet or electronic file, with this application.)

\*Many qualified applicants may not have entries in each category.

### **EDUCATION:**

Community College	Major	Year degree earned, Cumulative GPA
University	Major	Current status, Cumulative GPA
		Intended Degree, Expected date of graduation

### **WORK EXPERIENCE:**

This category should include off-campus work as well as any on-campus *teaching, tutoring, and research* performed. Indicate location, dates and brief description of activities in reverse chronological order (latest to earliest).

### **PROFESSIONAL AND NON-PROFESSIONAL AFFILIATIONS:**

This category should include student- and science-oriented memberships in reverse chronological order.

### **AWARDS AND HONORS:**

This category should include academic and extracurricular honors and awards, as well as any research grant awards, in reverse chronological order.

### **SERVICE AND VOLUNTEER ACTIVITIES:**

These activities should be cumulative and inclusive. Indicate site and dates of involvement in reverse chronological order.

### **SPECIAL SKILLS:**

This category may include language proficiency, computer knowledge (both hardware and software), as well as experience with scientific instrumentation and protocols. Rate your ability as: **novice** – have used with supervision/ have some familiarity; **competent** – can use on your own without supervision; **mastery** – can troubleshoot protocol and can teach someone else.

### **PUBLICATIONS/PRESENTATIONS (OPTIONAL):**

Most applicants will not have entries in this category (after all, developing this area is one of the purposes of the MARC program). If you have any publications, published abstracts, or presentations (both poster and oral), list them in reverse chronological order. Use this format: Last name of first author, initials, and co-authors last name, initials. (date) “title,” journal. **volume**, pages.

### **HOBBIES:**

This category should include activities that show how you spend your non-academic and non-service/volunteer time.

## CAREER ESSAY 1

*In 500 words, please respond to the following prompt.*

What are your future educational and career goals? After graduating from Cal State Fullerton, what additional degree(s) are you interested in obtaining? What professional setting do you see yourself pursuing for your long-term research goals?

## CAREER ESSAY 2

*In 500 words, please respond to the following prompt.*

Why are you interested in entering the Cal State Fullerton MARC Program and conducting scientific research? Please address what you see as benefits of the program in helping you meet your immediate and long-term research goals. Please also discuss any current research you are conducting and how it has influenced your career decision(s).

## OTHER SUPPORT

Below provide a statement of any financial aid that you currently receive and the names of organizations providing this support. This declaration will in no way cause your application to be viewed with bias or be a factor in the selection of our candidates.

## SPECIAL CONSIDERATIONS

Please indicate whether you:

- Are an under-represented minority (NIH defines this category as African American, Pacific Islander, Hispanic American, or Native American.)
- Are applying as a financially-disadvantaged student (include a copy of your last federal income tax reporting form).
- Are applying as someone who comes from a social, cultural, and/or educational environment that has demonstrably worked against you being able to obtain the knowledge, skills, and abilities that are needed to develop and participate in a research career (e.g. from a high school that does not send a high percentage of students to four-year colleges).  
High School \_\_\_\_\_ Graduation Date: \_\_\_\_\_
- Are applying as an individual with a physical disability or mental impairment that substantially limits one or more major life activities.
- Are the first person or generation in your family to attend a four-year university.

## SPECIAL CONSIDERATIONS ESSAY

*In 500 words, please respond to the following prompt.*

Students who meet one or more of the special considerations on the previous page have often encountered impediments to advancing their education. What impediments have you had, and how would your pursuit of higher education benefit from participation in the Cal State Fullerton MARC Program?





## LETTERS OF RECOMMENDATION

List the names of three individuals, of which **two must be faculty**, who will be submitting letters of recommendation on your behalf.

It is the applicant's responsibility to make sure that all three letters are submitted by the application deadline. Submission of fewer than three letters may put an application at a disadvantage.

**ALL LETTERS MUST BE RECEIVED NO LATER THAN THE APPLICATION DEADLINE of January 30, 2018.**

Name: \_\_\_\_\_ E-mail (required): \_\_\_\_\_

Title/University: \_\_\_\_\_ Telephone: \_\_\_\_\_

Name: \_\_\_\_\_ E-mail (required): \_\_\_\_\_

Title/University: \_\_\_\_\_ Telephone: \_\_\_\_\_

Name: \_\_\_\_\_ E-mail (required): \_\_\_\_\_

Title/University: \_\_\_\_\_ Telephone: \_\_\_\_\_

## TRANSCRIPTS

Transcripts (unofficial are acceptable) of coursework completed at the date of application. Include non-Cal State Fullerton transcripts, if applicable.

**Transcripts must be received before the application deadline (January 30, 2018).**

## MARC PROGRAM INFORMATION

How did you learn about the MARC-CSUF Program? (Check all that apply)

- Recruitment/Research Conference (specify) \_\_\_\_\_
- Past MARC Scholar (name) \_\_\_\_\_
- Current MARC Scholar (name) \_\_\_\_\_
- CSUF department/staff/student (specify) \_\_\_\_\_
- MARC-CSUF web-site
- Your previous college department (specify) \_\_\_\_\_
- Faculty member or advisor at your previous college (name) \_\_\_\_\_
- Other (specify) \_\_\_\_\_

## APPLICANT'S SIGNATURE

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Send all application materials by January 30, 2018**, including letters of recommendation and transcripts to Shreshta Aiyar: [marcstudentassistant@fullerton.edu](mailto:marcstudentassistant@fullerton.edu)

**For information about the MARC program, you may also contact:**

Dr. Amybeth Cohen (MARC Director)

Department of Biological Science

California State University, Fullerton

[acohen@fullerton.edu](mailto:acohen@fullerton.edu)

## RESEARCH INTERESTS

Below are a list of professors who participate in the MARC Program, and a brief summary of their research interests. Check all professors that conduct research in your area of interest. Note that additional faculty mentors may be listed on the MARC websites, who have just been added. If interested in a professor(s) not listed, write the name(s) at end of the list.

Biological physics, soft, and active matter - Quantitative measurements of softy squishy matter using laser tweezers and high-speed microscopy.

**Mentor: Dr. Wylie Ahmed** *Physics*

All aspects of human memory, including the cognitive processes underlying memories for non-existent events (false memories), the effects oxytocin on face identification to test models of face recognition memory, and the cognitive mechanisms underlying deception.

**Mentor: Dr. Iris Blandon-Gitlin** *Psychology*

Cell biology of phagocytosis; genetic approaches to elucidating mechanisms used by white blood cells to control the killing of engulfed microbes.

**Mentor: Dr. Catherine Brennan** *Biological Science*

Molecular biology of microbe-host interactions; Bacterial genes and signals involved in forming a symbiosis with plants.

**Mentor: Dr. Esther Chen** *Biological Science*

Regulation of photosynthetic gene expression in plants; red light and  $\text{Ca}^{2+}$ /CaM signaling pathways.

**Mentor: Dr. Amybeth Cohen** *Biological Science*

Analysis of protein and lipid interactomes of TRP ion channels; roles of metal transporters and ion channels in the neuropathology of Alzheimer's disease and other neurodegenerative disorders; drug discovery for metal transporters and ion channels.

**Mentor: Dr. Math P. Cuajungco** *Biological Science*

Electrochemistry of energy and sensing for applications in biomedicine, environmental science, and alternative energy.

**Mentor: Dr. John Haan** *Chemistry and Biochemistry*

Properties and chemistry of aerosols naturally present in the atmosphere (such as sea salt and burned biomass) interacting with man-made pollutants, to better understand human effects on global climate change.

**Mentor: Dr. Paula Hudson** *Chemistry and Biochemistry*

Role of ion channels in sensing and adaptation to environmental conditions in protozoan parasites. Electrophysiological characterization of channels in parasites.

**Mentor: Dr. Veronica Jimenez** *Biological Science*

Physiology and biochemistry of microbial manganese oxidation. Microbial interactions with metals and metal cycling.

**Mentor: Dr. Hope Johnson** *Biological Science*

Understanding how post-translational modifications alter the activity of splicing factors and in turn affect cellular gene expression

**Mentor: Dr. Niroshika Keppetipola** *Biochemistry*

Computational Applied Mathematics: Modeling; Numerical Algorithms; Simulation; Optimization; Pattern Recognition; DNA Microarrays; Cancer Detection.

**Mentor: Dr. Charles Lee** *Mathematics*

Structure, function, regulation and gene expression of protein associated with transport and storage of iron and copper in mammals; Biochemistry of inflammation in relation to copper and iron metabolism.

**Mentor: Dr. Maria Linder** *Chemistry and Biochemistry*

Molecular mechanisms of Notch receptor signaling by typical and atypical ligands; developmental and cell biology of elastic fiber proteins.

**Mentor: Dr. Alison Miyamoto** *Biological Science*

Behavioral ecology, endocrinology and conservation biology of the nonhuman primates; sources and consequences of variation in social behavior among individuals, across groups and populations; the biology of parenting, the evolution of male-female bonds, and sex differences in behavior and ecology.

**Mentor: Dr. Nga Nguyen** *Anthropology*

Evolution and functional differentiation of proteins involved in stress and immune responses.

**Mentor: Dr. Nikolas Nikolaidis** *Biological Science*

Comparative functional anatomy, biomechanics, and biomaterials focusing on marine systems. Emphasis on biomimetic filters.

**Mentor: Dr. Misty Paig-Tran** *Biological Science*

Regulation of apolipoprotein-E gene expression, and its role in Alzheimer's disease.

**Mentor: Dr. Nilay Patel** *Biological Science*

Human visual perception and color vision. Recent topics include color from motion, optical illusions, and color vision screening tests.

**Mentor: Dr. Eriko Self** *Psychology*

Visual recognition of objects and faces, using both applied and evolutionary perspectives.

**Mentor: Dr. Jessie Peissig** *Psychology*

Identification and characterization of antibiotic resistance mechanisms, their dissemination, evolution and impact in morbidity and mortality of bacterial infections.

**Mentor: Dr. Maria Soledad Ramirez** *Biological Science*

Investigation of the neurophysiological basis of memory in larval zebrafish - an impressive molecular vertebrate system to further understand the neural basis of learning and memory.

**Mentor: Dr. Adam Roberts** *Psychology*

Mechanism Design, Robotics, Biomechanics, Assistive Technologies, Human-Robot Interaction.

**Mentor: Dr. Nina Robson** *Mechanical Engineering*

Molecular biology of plant-pathogen interactions; protein-protein interactions and signaling in disease resistance.

**Mentor: Dr. Melanie Sacco** *Biological Science*

Twin studies of behavioral development; evolutionary and psychological approaches to behavior.

**Mentor: Dr. Nancy Segal** *Psychology*

Evolutionary genomics, population genetics, experimental evolution, aging, immune defense, *Drosophila melanogaster*.

**Mentor: Dr. Parvin Shahrestani** *Biological Science*

Uptake and translocation of environmental pollutants into wetland and upland plants. Potential for use of algae to reduce wastewater contaminants and produce bioproducts.

**Mentor: Dr. Garrett Struckhoff** *Civil and Environmental Engineering*

Molecular genetics and mechanism that contribute to the virulence of pathogenic bacteria.

**Mentor: Dr. Marcelo Tolmasky** *Biological Science*

The anatomy and pharmacology of the basal ganglia, related to Parkinson's disease and motor function. The relationship between dopamine and adenosine, and their combined effects on motor function.

**Mentor: Dr. Jennifer Trevitt** *Psychology*

Mathematical modeling of biological systems. Computational studies of cellular stress responses and biochemical oscillators.

**Mentor: Dr. Anael Verdugo** *Mathematics*

**Mentor not listed above from CSUF website information** \_\_\_\_\_

**Mentor not listed above from CSUF website information** \_\_\_\_\_

**Mentor not listed above from CSUF website information** \_\_\_\_\_