



HOWARD HUGHES MEDICAL INSTITUTE
WEEKEND RESEARCH EXPERIENCE
for High School Students
at California State University, Fullerton
November 9, 10, and 16, 2013



PROGRAM GOAL AND DESCRIPTION

The HHMI Weekend Research program targets the engagement of high school students in research experiences that will excite their interest in chemistry, biology and mathematics. It is particularly interested in supporting those who have little or no experience with, or knowledge of, research. Students will immerse themselves in three days of in-depth work on an actual research question under the supervision of faculty mentors over two contiguous weekends.

Entry into the HHMI Weekend Research Experience is by application (next pages). Applicants need to be juniors or seniors, and must have completed a high school course in chemistry and/or biology, plus advanced algebra. **Applications must be submitted to Mary Flores (mflores@fullerton.edu) at Cal State Fullerton.** Application forms are available online from the CSUF-HHMI website (<http://hhmi.fullerton.edu>).

FALL 2013 WEEKEND RESEARCH PROJECT

Functional Characterization of human polymorphisms: The potential significance of small differences the gene for heat shock protein HSPA1A in the human population.

This year's Weekend Research Experience (WRE), supported by the California State University Fullerton-Howard Hughes Medical Institute Research Scholars Program comes out of research being done by Dr. Nikolas Nikolaidis, in the Department of Biological Science. He and his students will direct the work. The project concerns a fundamental question in molecular evolution, which is to understand how changes at the molecular level (gene DNA or the proteins encoded by the genes) alter, affect, and change the way organisms, organs, cells, and cellular systems adapt to their environments, to cope with changes and challenges, and survive. The specific project for the WRE will determine whether naturally occurring DNA variants of a gene that codes for HSPA1A (a heat shock protein) affect the functionality of this protein. The project will use recombinant proteins that carry specific particular mutations found in normal humans, and compare the activities/functions to those of the most common (wild type) forms of the proteins, using specific biochemical assays. Any changes in the function of these proteins will suggest that different human populations may respond differently to stresses, such as heat shock, oxygen radicals, and heavy metals, or conditions of diseases like heart disease and cancer.

Supported by a Grant from the Howard Hughes Medical Institute to Cal State Fullerton



HOWARD HUGHES MEDICAL INSTITUTE – CSUF
WEEKEND RESEARCH EXPERIENCE
APPLICATION FORM for HIGH SCHOOL STUDENTS
November 9, 10, and 16, 2013



Application Deadline: October 4, 2013

Applications may be downloaded at [http:// hhmi.fullerton.edu](http://hhmi.fullerton.edu)

APPLICANT INFORMATION

Name: _____
Last First Middle

Date of Birth (MM/DD/YY): _____

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:

- American Indian/Alaskan/Native American
- African-American/Black.
- Asian-American
- European-American
- Filipino/Filipino-American
- Latin/Other Spanish American
- Mexican/Mexican American
- Mid Eastern-American
- Pacific Islander
- Puerto Rican
- Other: _____

Primary language spoken at home: _____

Parent's Education (Highest level completed)

- Father Some H.S. H.S. Diploma/GED Some College Bachelor's
 Some graduate school Masters Doctorate
- Mother Some H.S. H.S. Diploma/GED Some College Bachelor's
 Some graduate school Masters Doctorate

ACADEMIC INFORMATION

High School: _____

Year (Check One): Freshman Sophomore Junior Senior

Overall GPA: _____ Science GPA: _____

Expected graduation date: (Check One): June 2014 June 2015 June 2016

Select ALL science and mathematics courses completed:

Biology Chemistry Physics Integrated/Physical Science Other _____
 Algebra Geometry Algebra II Precalculus AP Calculus Other _____

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 the first person or generation in your family to have attended a four-year university.
- Enrolled in a high school that does not send a high percentage of students to four-year colleges.

LETTERS OF RECOMMENDATION

List the names of at least one teacher who can provide a letter on your behalf. *One letter must be received by Mary Flores (mflores@fullerton.edu) no later than Oct. 1.*

Name: _____ E-mail (required): _____

Title/Affiliation: _____ Telephone: _____

Name: _____ E-mail (required): _____

Title/Affiliation: _____ Telephone: _____

HHMI PROGRAM INFORMATION

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

- Teacher or advisor at your school (name) _____
- Past HHMI Scholar (name) _____
- Other (specify) _____

APPLICANT'S SIGNATURE

Student Signature _____ Date _____

Parent Signature _____ Date _____

Parent Name _____ Parent Contact Info _____

ESSAY

Explain briefly why are you interested in participating in this HHMI Weekend Experience and in doing biomedical research.