OMB No. 0925-0001 and 0925-0002 (Rev. 10/15 Approved Through 10/31/2018)

APPLICANT BIOGRAPHICAL SKETCH

NAME OF APPLICANT: Si’Ana Coggins

eRA COMMONS USER NAME (credential, e.g., agency login): sianacoggins

POSITION TITLE: Graduate Student

EDUCATION/TRAINING

| INSTITUTION AND LOCATION | DEGREE(if applicable) | START DATEMM/YYYY | END DATE (or expected end date)MM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- | --- |
| University of Arizona, Tucson, ArizonaUniversity of Arizona, Tucson, ArizonaEmory University | Bachelors of ScienceBachelors of SciencePhD | 08/201108/201108/2015 | 05/201505/2015- | BiochemistryMolecular & Cellular BiologyBiochemistry, Cell, and Developmental Biology |

**NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.**

# A. Personal Statement

My long-term research interests include the establishment and expansion of knowledge pertaining to cellular biochemical activities affected in various diseases and syndromes. Upon the completion of graduate school, I plan to take a postdoctoral position at another institution before pursuing a career of conducting biomedical research for the government. My academic training to date has provided me with an excellent background in biochemistry and molecular biology, while my diverse research training experiences will enable me to approach questions from many directions. As an undergraduate at the University of Arizona, I was awarded the Minority Access to Research Careers (MARC) grant and conducted research in Thomas Doetschman’s lab where I investigated the aversive effects of 5-fluorouracil treatment on patients containing various combinations of TGF-β and KRAS mutations. I presented this research in poster format at both the 2013 and 2014 ABRCMS conferences. Also during my undergraduate career, I was given the opportunity to conduct research in Roger Kamm’s lab at the Massachusetts Institute of Technology as part of the Emergent Behaviors of Integrated Cellular System (EBICS) summer Research Experience for Undergraduates (REU). This research experience exposed me to the interesting relationship between biomedical engineering and biochemistry as I utilized microfluidic devices to observe the effects of macrophage polarization on cancer cell migration. Recently, I have turned my focus to the research field I am most interested in: infectious diseases. I am currently training under Baek Kim at Emory University and studying the biochemical activity of SIV reverse transcriptase originating from an infection that was devoid of Vpx. My training in the laboratory of Dr. Baek Kim will provide me with both knowledge and technology in the basic science research of HIV/AIDS and infectious diseases, which will be a key part of my career conducting biomedical research in a government environment.

# B. Positions and Honors

Gilbert R. Escalante Memorial Scholarship for Biomedical Research at the University of Arizona: Galileo Circle Scholar, 2015

Honorable Mention at 2015 Chemistry & Biochemistry (CBC) Poster Fair, 2015
B.S. in Biochemistry, Cum Laude and awarded with honors, University of Arizona, 2015

B.S. in Molecular & Cellular Biology, Cum Laude, University of Arizona, 2015

Minority Access to Research Careers (MARC) Grant for effective mentorship, professional development, financial support, and access to biomedical research opportunities for underrepresented students, 2013-2015

Arizona’s Instrument to Measure Standards (AIMS) Scholarship award to those (a) receiving exceeding scores on all four sections (reading, writing, math, and science) of the state’s standardized test and (b) attending an in-state state school, 2011-2015

Dean’s List (Academic Distinction based on GPA), 2011-2015

National Achievement Scholar (recognition of outstanding African American high school students based on SAT scores), 2011

# C. Contributions to Science (for predoctoral students and more advanced candidates only; high school students, undergraduates, and postbaccalaureates should skip this section)

Undergraduate Research: I conducted two years of research in the lab of Thomas Doetschman at the University of Arizona. My project investigated colorectal cancer and the inconsistent adverse effects of 5-fluorouracil chemotherapeutic treatment. We suspected the differential effects of the drug were reliant on the various methods in which the body can metabolize the drug—methods dependent on the presence or absence of various mutations in TGFβR2 or KRAS. Cell culture and RT-PCR techniques were used to look at this question, resulting in extensive characterization of the utilized cell lines.

1. Coggins, S., Doetschman T. 5-FU Chemotherapy Failure in Some Colorectal Cancer Patients with Microsatellite Instability. Abstract for poster presentation, ABRCMS annual meeting, Nashville, TN October 2013.
2. Coggins, S., Doetschman T. 5-FU Chemotherapy Failure in Some Colorectal Cancer Patients with Microsatellite Instability. Abstract for poster presentation, ABRCMS annual meeting, San Antonio, TX November 2014.
3. Coggins, S., Doetschman T. 5-FU Chemotherapy Failure in Some Colorectal Cancer Patients with Microsatellite Instability. Abstract for poster presentation, Chemistry & Biochemistry Commencement Poster Session, May 2015.
4. Coggins, S., Doetschman T. 5-FU Chemotherapy Failure in Some Colorectal Cancer Patients with Microsatellite Instability. Senior Thesis, University of Arizona, May 2015.

REU Research: I spent 10 weeks training under Roger Kamm at the Massachusetts Institute of Technology characterizing the differential effects of macrophage polarization on cancer cell migration. Using microfluidic devices, antibiotic staining, ELISA analysis, and various imaging techniques we were thrilled to discover that the speed and direction of cancer cell migration can be influenced by the polarization state of nearby macrophage populations. These findings will help further understand the role tumor associated macrophages (TAMs) have on the metastasis and proliferation of various cancers.

1. The Dierenal Eects of M1 and M2 Macrophages on Cancer Cell Migraon in 3D Extra Cellular
2. Matrices
3. Coggins, S., Li R., Kamm, R. The Differential Effects of M1 and M2 Macrophages on Cancer Cell Migration in 3D Extracellular Matrices. Abstract for poster presentation, 29th Annual Summer Research Programs Poster Session for EBICS, Broad Institute, and MIT Summer Research Program (MSRP), August 2014.

Graduate Research: My first year in graduate school at Emory University, I rotated in Yue Feng’s lab. The goal of my rotation project was to gain insights into the posttranscriptional regulation of Cdk5 activators p35 and p39, an important mechanism suggested by recent literature and unpublished data from the Feng lab. Through molecular cloning techniques and luciferase assays, I was ultimately able to obtain preliminary results that indicated (a) the 3’ AU-rich element (ARE) in the p35 3’ untranslated region (UTR) is unlikely mediating regulation by the RNA-binding protein HuD and (b) the G-quadruplexes found in the 3’UTR of p39 could potentially regulate p39 expression.

1. A novel HuD-microRNA pathway regulates the function of cyclin-dependent kinase 5 in the brain
Allen, Megan; Li, Wenqi; Morris, Kevin; Huang, Li; Bankston, Andrew; Liu, Guanglu; Feng, Wei; Coggins, Si’Ana; Feng, Yue—Nucleic Acids Research (In review)

# D. Scholastic Performance

| YEAR | COURSE TITLE | GRADE | YEAR | COURSE TITLE | GRADE |
| --- | --- | --- | --- | --- | --- |
| 2011 |  Intensive Spanish | B | 2011 | Finite Mathematics | A |
| 2011 |  Third Semester Spanish | A | 2011 | Elements of Calculus | A |
| 2011 | Intro to Psychology | A | 2011 | Special Topics in Science | A |
| 2011 | US & AZ Constitution |  B | 2011 | Honors Quest | A |
| 2011 | Calculus I | B | 2011 | Introduction to Literature | A |
| 2011 | Calculus I With Apps | B | 2011 | First-Year Composition | A |
| 2011 | General Chemistry I | B | 2011 | General Chemistry II | A |
| 2012 | The Pursuit of Happiness | A | 2012 | Calculus II | B |
| 2012 | Looking at Dance | A | 2012 | Organic Chemistry Lab I | A |
| 2012 | Organic Chemistry Lecture I | A | 2012 | The Physical Universe | A |
| 2012 | Criminal Justice Admin | A | 2012 | Introductory Biology II | B |
| 2012 | Mathematical Physics for Chem | B | 2012 | Organic Chemistry Lab II | A |
| 2012 | Organic Chemistry Lecture II | B | 2012 | Intro to Biochem Research | A |
| 2013 | Rap, Culture, and God | A | 2013 | Introductory Mechanics | B |
| 2013 | Introductory Biology I | A | 2013 | Reading Builds Community | A |
| 2013 | Honors Colloquium | A | 2013 | Leadership: Vision + Voice | A |
| 2013 | Intro Biology Lab II | B | 2013 | Race, Class, Gender, and Sports | A |
| 2013 | Biochem Lab Techniques | A | 2013 | Biochemistry I | B |
| 2013 | Scientific Writing | A | 2013 | Minority Biomd Rsrch Clq | A |
| 2013 | Expl Art + Visual Culture | A | 2014 | Intro Elec + Magnetism | C |
| 2014 | Molecular Genetics | A | 2014 | Biochemistry II | B |
| 2014 | Scientific Writing | A | 2014 | Minority Biomd Rsrch Clq | A |
| 2014 | Cell Development Biology | A | 2014 | Evol/Infectious Disease | A |
| 2014 | Physical Chemistry I | B | 2014 | Honors Thesis | A |
| 2014 | Minority Biomd Rsrch Clq | A | 2015 | Honors Colloquium | A |
| 2015 | Physical Chemistry II | D | 2015 | Honors Thesis | A |
| 2015 | Biochem of Nucleic Acids | B | 2015 | Minority Biomd Rsrch Clq | A |

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