OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 01/31/2026)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME:

eRA COMMONS USER NAME (credential, e.g., agency login): *Required for the PD/PI (including career development and fellowship applicants), primary sponsors of fellowship applicants, all mentors of candidates for mentored career development awards, and candidates for diversity and reentry research supplements. Optional for project personnel. The eRA Commons User Name should match information provided in the Credential field of the R&R Senior/Key Person Profile (Expanded) Form in your grant application.*

POSITION TITLE: *Keep succinct; do not include department, state etc.*

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE  (if applicable) | Start Date  MM/YYYY | Completion Date  MM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- | --- |
|  | *Use postbaccalaureate, postdoctoral, residency, fellowship as appropriate.* |  | *For training not yet completed, include expected completion date.* | *For residency entries, field of study should reflect the area of residency training.* |
|  | *Do not include industry training.* |  |  |  |

1. **Personal Statement**

* ***Briefly describe why you are well-suited for the role in this project and include a statement about the relevance of your qualifications for this particular grant, which can include:*** 
  + ***Aspects of your training***
  + ***Previous experimental work on this specific topic or related topics***
  + ***Technical expertise***
  + ***Collaborators or scientific environment***
  + ***Past performance in this or related field, including*** *ongoing and completed research projects from the past three years that you want to draw attention to (****previously captured under Section D. Research Support****).*
  + ***Factors that affected past productivity (use judiciously; e.g. only exceptional circumstances)***
  + ***Indication that you have published under another name, if appropriate***
  + ***Contributions to science not included in section C***
* ***Cite up to four publications or research products that highlight your experience and qualifications for this project (and include reference to citations* in the text).** *You are allowed to cite interim research products.*
* ***Applicants for dissertation research awards (e.g., R36) should, in addition to addressing the points noted above, also include a description of their:***
  + ***career goals***
  + ***intended career trajectory***
  + ***interest in the specific areas of research designated in the FOA.***
* ***Candidates for research supplements to promote diversity in health-related research should, in addition to addressing the points noted above, also include a description of their:***
  + ***general scientific achievements and/or interests***
  + ***specific research objectives***
  + ***career goals***

***Indicate any current source(s) of educational funding.***

**B. Positions, Scientific Appointments, and Honors**

***Positions and Scientific Appointments***

* ***List, in reverse chronological order, all positions and scientific appointments both domestic and foreign, including affiliations with foreign entities or governments. This includes titled academic, professional, or institutional appointments whether or not remuneration is received, and whether full-time, part-time, or voluntary (including adjunct, visiting, and honorary). For individuals who are not currently located at the applicant organization, include the expected position at the applicant organization and the expected start date.***
* ***High school students and undergraduates may include any previous positions.***

***Honors***

* ***Students, postdoctorates, and junior faculty should include scholarships, traineeships, fellowships, and development awards, as applicable.***

***Other Experience and Professional Memberships***

* ***Include memberships in professional societies, study section participation, editorial experience.***
* ***Clinicians should include information on any clinical licensures and specialty board certifications that they have achieved.***

**C. Contributions to Science**

* ***Briefly describe up to 5 of your most significant contributions to science. Each description should include:***
  + ***The historical background that frames the scientific problem***
  + ***The central finding(s)***
  + ***The influence of the finding(s) on the progress of science of the application of those finding(s) to health or technology***
  + ***Your specific role in the described work***
* ***Graduate students, postdoctorates, and junior faculty may wish to consider highlighting two or three contributions they consider most significant (e.g., are not expected to have 5 contributions).***
* ***Number each contribution (1-5) and include a subheading for each.***
* ***Up to 4 publications or research products relevant to the contribution may be cited.***
* ***The description of each contribution should be no longer than one half page, including citations.***
* ***Begin this section with contributions most relevant to the proposed project***

**Complete list of published works:**

* ***End this section with a URL to a full list of published work. Often this list is kept in the*** [*My Bibliography*](https://www.ncbi.nlm.nih.gov/books/NBK53595/) ***tool.***

Sample **Predoctoral** Biosketch from NIH

<https://grants.nih.gov/grants/forms/biosketch.htm>

OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Simmons-Gonzales, Leilani

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

POSITION TITLE: Graduate Student Research Assistant

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE  (if applicable) | Start Date  MM/YYYY | Completion Date  MM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- | --- |
| Purdue University | BA | 08/2014 | 05/2018 | Biological Chemistry |
| UC San Diego | PHD | 08/2018 | 05/2023 (Expected) | Molecular Biology |

**A. Personal Statement**

I first became interested in human health and disease in high school when I was awarded an NIH Diversity Supplement to work as a research technician for two summers in Dr. Indira Creative’s lab at the University of Hawaii. I continued to pursue this interest as an undergraduate at Purdue University, where I conducted research with Dr. Daniel Richardson on the mechanisms of action of a new class of small molecules for cancer treatment. This resulted in a co-authorship publication, as well as an invitation to present a poster at the annual Oncological meeting in Denver, Colorado. By the end of my undergraduate career, I knew that I wanted to pursue a long-term career in research. For my graduate training at UC San Diego, I have moved into the fields of genetics and biochemistry by studying the signaling and motility mechanisms of cancer cells, under the mentorship of Dr. Nani Green. Dr. Green is an internationally recognized leader in the field of cancer genetics and has an extensive record for training predoctoral and postdoctoral fellows. Along with giving me new conceptual and technical training, the proposed training plan outlines a comprehensive set of career development activities and workshops. I will have opportunities to engage in public speaking, conduct literature analysis, consider biomedical ethics, and learn about varied career options. For my initial project, I am currently developing a novel protocol for the identification of transcription complexes involved in cancer signaling pathways, which I hope to submit as a first author publication in the next few months. As a native Hawaiian, I am the first in my family to graduate from college, and I am excited to continue making great strides with my education. Overall, I believe that my current research setting in conjunction with my proposed training plan will provide a solid foundation for my long-term goal to become an academic researcher.

* 1. Nieman PY, **Simmons-Gonzales L**, Richardson, D. Gen Y: a novel small molecule with cytotoxic abilities targeting colon cancer cells. Cellular and Molecular Biology. 2018 June. 7(20):13672-78.

**B. Positions, Scientific Appointments, and Honors**

**Positions and Scientific Appointments**

**2019 – 2020 Robertson Fellowship for Outstanding Graduate Students, Genetics Department, UC San Diego**

**2018 – Present Graduate Research Assistant, UC San Diego**

**2016 – 2018 Lab Technician, University of Hawaii**

**2014 – Present Member, Association for Women in Science**

**2014 – Present Member, Sigma Xi**

**2014 – 2016 Diversity Supplement, National Institutes of Health**

**Honors**

**2020 Virtual Poster Presenter, Genetics and Molecular Biology Meeting**

**2019 Poster Presenter, Advances in Cancer Research and Therapy Meeting**

**2018 Paula F. Laufenberg award for best senior project in the Biology Department, Purdue University**

**2014 – 2018 Scholarship, National Merit Scholarship Program**

**2014 Scholarship, Daughters of Hawaii Society**

**C. Contributions to Science**

1. **High School Research:** I spent two summers doing research in the laboratory of Dr. Indira Creative at University of Hawaii, funded by a NIH Diversity Supplement award. Dr. Creative has developed several new anti-fungal drugs that might protect against skin infections. Over the course of two summers I set up in vitro cultures of skin cell lines and conducted a wide range of toxicity assays. We were excited to find that one of the new agents showed almost no toxicity, even at fairly high doses. Dr. Creative is now testing the drug in animals exposed to different types of fungal infections, including Candida albicans.
   1. Footman B, Eisser JK, **Simmons-Gonzales, L**, Creative IM. Testing XXH for toxicity in vitro. University of Hawaii Research Symposium; 2012 May; Manoa, HI.
2. **Undergraduate Research:** I was part of a project in the laboratory of Dr. Daniel Richardson at Purdue University. Dr. Richardson’s laboratory studies the mechanisms of action of small molecules for cancer treatment. During my time in his lab I was looking at how a new small molecule, Gen Y, is able to target cancerous cells. My contributions to this work were included in a publication recently accepted in Cellular and Molecular Biology. The work was particularly exciting because it looks like the mechanism of action of Gen Y might be completely novel, making it a potential candidate for treating patients afflicted with colon cancer. Dr. Richardson was recently awarded a patent for this new drug.
   1. Nieman PY, **Simmons-Gonzales L**, Richardson, D. Gen Y: a novel small molecule with cytotoxic abilities targeting colon cancer cells. Cellular and Molecular Biology. 2018 June. 7(20):13672-78.
   2. **Simmons-Gonzales, L**, Richardson, D. Testing the ability of a small molecule, Gen Y, to target colon cancer cells. Advances in Cancer Research and Therapy; 2019 September; Denver, CO.
3. **Graduate Research**: My ongoing predoctoral research is focused on transcriptional gene regulation and signaling impacting motility of cancer cells. I believe the results from my research will likely be highly relevant to human health as they will provide new details into the workings of complex biological systems, which will allow for further extrapolations into the development of several types of cancer and their progression. I am currently developing a novel protocol for the identification of transcription complexes involved in cancer signaling pathways, which I hope to submit as a first author publication in the next few months.
   1. **Simmons-Gonzales, L**, Green, N. A tandem identification approach for transcriptional complexes involved in the signaling and motility of cancerous cells. Genetics and Molecular Biology Virtual Meeting; 2020 September

**D. Scholastic Performance**

| YEAR | COURSE TITLE | GRADE |
| --- | --- | --- |
|  | | |
|  |  |  |
|  | Purdue University |  |
| 2014 | Introductory Biology | A |
| 2014 | Introductory Biology Lab | A |
| 2014 | Foundations of Chemical Principles | A |
| 2014 | French and Francophone World | A |
| 2014 | Ethics, Religion, and Culture Today | A |
| 2015 | Organismal and Population Biology | B |
| 2015 | Omics | B |
| 2015 | First Year Seminar: Nation and Migration | A |
| 2015 | Statistics, Probability, and Reliability | A |
| 2015 | Calculus I | B |
| 2015 | General Physics I | B |
| 2015 | Introductory Chemistry | A |
| 2015 | Population & Ecol Genetics | A |
| 2015 | Organic Chemistry | B |
| 2016 | American Literature | B |
| 2016 | General Physics II | B |
| 2016 | Organic Chemistry II | B |
| 2016 | Microbial Pathogenesis and the Immune Response | A |
| 2016 | Introduction to Cognitive Science | A |
| 2016 | Self Defense | P |
| 2016 | Biological Chemistry | B |
| 2017 | Anthropology of Childhood and the Family | A |
| 2017 | Disease, Culture, and Society in the Modern World | A |
| 2017 | Intro to Psychology | A |
| 2017 | Health & Fitness Walking | P |
| 2017 | State & Local Govt | A |
| 2017 | Human Genetic20 | A |
| 2017 | Senior Project | A |
| 2017 | Bioinformatics | B |
| 2018 | Cell Biology | A |
| 2018 | Quantitative Analysis | B |
| 2018 | Quantitative Analysis Lab | A |
| 2018 | Physics in Modern Medicine | A |
| 2018 | Ethical Principles in Law and Economics | B |
| 2018 | Bowling | P |
| 2018 | Genomics and Systems Biology | A |
| 2018 | Senior Project | A |
|  | UC San Diego |  |
| 2018 | Seminar in Genetics | P |
| 2018 | Statistics for the Life Sciences | P |
| 2018 | Ethics in Biological Research | CRE |
| 2019 | Seminar in Physiology and Behavior | P |
| 2019 | Cancer Immunology | P |
| 2020 | Mechanisms of Cell Motility | P |
| 2020 | Biochemical Mechanisms of Cancer Cells | P |
| 2020 | Toxicology | P |
| 2020 | Physiology for the Molecular Biologist | P |

Except for the scientific ethics course, UC San Diego graduate courses are graded P (pass) or F (fail). Passing is C plus or better. The scientific ethics course is graded CRE (credit) or NC (no credit). Students must attend at least seven of the eight presentation/discussion sessions for credit.

Sample **Postdoctoral** Biosketch from NIH

<https://grants.nih.gov/grants/forms/biosketch.htm>

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BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Hayes, Susan

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

POSITION TITLE: Postdoctoral Fellow

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE  (if applicable) | Start Date  MM/YYYY | Completion Date  MM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- | --- |
| Wake Forest University | BS | 08/2009 | 05/2013 | Engineering |
| Georgetown University | PHD | 08/2013 | 05/2019 | Molecular Biology |
| Michigan State University | Postdoctoral Fellow | 09/2019 | Present | Bioinformatics/Immunology |

**A. Personal Statement**

My academic training and research experience have provided me with an excellent background in multiple biological disciplines including molecular biology, microbiology, biochemistry, and genetics. As an undergraduate, I conducted research with Dr. Xavier Factor on the mechanisms of action of a new class of antibiotics. As a predoctoral student with Dr. Tanti Auguri, my research focused on the regulation of transcription in yeast, and I gained expertise in the isolation and biochemical characterization of transcription complexes. I developed a novel protocol for the purification of components of large transcription complexes. I was first author of the initial description of the Most Novel Complex. A subsequent first author publication challenged a key paradigm of transcription elongation and was a featured article in a major journal. During my undergraduate and graduate careers, I received several academic and teaching awards. For my postdoctoral training, I will continue to build on my previous training in transcriptional controls by moving into a mammalian system that will allow me to address additional questions regarding the regulation of differentiation and development. My sponsor Dr. I.M. Creative is an internationally recognized leader in the transcription/chromatin field and has an extensive record of training postdoctoral fellows. The proposed research will provide me with new conceptual and technical training in developmental biology and whole genome analysis. In addition, the proposed training plan outlines a set of career development activities and workshops – e.g. grant writing, public speaking, lab management, and mentoring students – designed to enhance my ability to become an independent investigator. My choice of sponsor, research project, and training will give me a solid foundation to reach my goal of studying developmental diseases in humans. During my second postdoctoral year in Dr. Creative’s lab, my father had a severe stroke that eventually ended his life. I was out of the lab for six months dealing with my father’s incapacitating illness and end-of-life issues. This hiatus in training reduced my scientific productivity. I am confident this proposed research project and training plan will enhance my scientific portfolio and will help recuperate my scientific productivity. My long-term research goals involve becoming an independent researcher and developing a comprehensive understanding of key developmental pathways and how alterations in gene expression contribute to human disease.

* 1. **Hayes S**, Schneider K, Chen M, Auguri T. Rapid isolation and characterization of a novel transcription complex in Saccharomyces cerevisiae and its role in transcription elongation. Journal of Cell Biology. 2016; 128:770.
  2. **Hayes S**, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in Saccharomyces cerevisiae. Proceedings of the National Academy of Sciences of the United States of America. 2019; 98:151.
  3. Yao M, Dionne CF, **Hayes S**, Murray GC. Up-regulation of Drosophila innate immunity genes in response to stress. Science (New York, N.Y.). 2020; 304:1754.
  4. **Hayes S**, Cescaloo Q, Murray GC. Structural analysis of Drosophila Rtc. Nature. Forthcoming 2021.

**B. Positions, Scientific Appointments, and Honors**

**Positions and Scientific Appointments**

**2019 – Present Postdoctoral Researcher, Michigan State University**

**2015 – 2018 Predoctoral Fellowship for Minorities, Ford Foundation**

**2013 – 2019 Graduate Research Assistant, Georgetown University**

**2012 – Present Member, National Society for Bioinformatics and Biotechnology**

**2010 – Present Member, Association for Women in Science**

**2010 – 2012 Engineer, The IBeam Group Program**

**2009 – Present Member, Sigma Xi**

|  |
| --- |
| **Honors** |

**2013 B.S. awarded with high honors, Wake Forest University**

**2013 Paula F. Laufenberg Award for best senior project in the Department of Engineering, Wake Forest University**

**2013 STAR award for public service in engineering, The IBeam Group**

**2010 – 2011 Scholarship, National Merit Scholarship Pr  
2009 – 2011 Scholarship, Daughters of Hawaii Society**

**C. Contributions to Science**

1. **Early Career:** My early career contributions were focused on applying my knowledge of structural engineering to improving the design and integrity of tensile structures. More specifically, I worked with a team of engineers at the IBeam Group to develop concrete with a higher tensile strength that could be utilized in large structures such as suspension bridges. My particular role in the project was to identify candidate polymers, determine the ultimate tensile strength of these polymers, and make recommendations as to which polymer would afford concrete the most structural integrity under various stresses.
   1. **Hayes S**, Janessa AJ. Redesigning the Golden Gate bridge. National Undergraduate Symposium on Science and Engineering; 2011; Baltimore, MD.
   2. Lorentson C, **Hayes S**, Sauer N, Mehta S. Use of high-tensile concrete in cantilevered structures. J Applied Engineering. 2012; 63:413.
2. **Graduate Career:** My graduate research contributions focused on transcriptional gene regulation in Saccharomyces cerevisiae. Results from my research were highly relevant as they provided new details into the workings of complex biological systems and allowed for further extrapolations into the development of certain diseases and their progression. I originally developed a novel protocol for the purification of components of large protein complexes. A subsequent publication, in which I isolated and characterized a long sought-after transcription complex, challenged a key paradigm of transcription elongation and was a featured article in a major journal.
   1. **Hayes S**, Schneider K, Chen M, Auguri T. Rapid isolation and characterization of the most novel transcription complex in Saccharomyces cerevisiae and its role in transcription elongation. CSHL Meeting on Mechanisms of Eukaryotic Transcription; 2015 August; Cold Spring Harbor, NY.
   2. **Hayes S**, Schneider K, Chen M, Auguri T. Rapid isolation and characterization of a novel transcription complex in Saccharomyces cerevisiae and its role in transcription elongation. Journal of Cell Biology. 2016; 128:770.
   3. **Hayes S**, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in Saccharomyces cerevisiae. Yeast Genetics and Molecular Biology Meeting; 2017 September; Seattle, WA.
   4. **Hayes S**, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in Saccharomyces cerevisiae. Proceedings of the National Academy of Sciences of the United States of America. 2019; 98:151.
3. **Postdoctoral Career:** As a postdoctoral fellow, my research has provided a compelling link between mutations arising in stress response proteins and the development of various autoimmune diseases in humans. Previous studies have shown dysregulation in the innate immune response lead to autoimmune diseases in humans. A few Rtc homologues have now been identified in humans and appear to play a role in the regulation of genes in the innate immune response. My research is focused on the transcriptional regulator Rtc from Drosophila melanogaster.
   1. **Hayes S**, Yager LN, Murray GC. Rtc is an essential component of the Drosophila innate immune response. Genetics. 2019; 145:884.
   2. Yao M, Dionne CF, **Hayes S**, Murray GC. Up-regulation of Drosophila innate immunity genes in response to stress. Science. 2020; 304:1754.
   3. **Hayes S**, Murray GC. Stress, flies, and videotape: the Drosophila stress response. Annual review of physiology. 2020; 346:223.
   4. **Hayes S**, Cescaloo Q, Murray GC. Structural analysis of Drosophila Rtc. Nature. Forthcoming 2021.

Complete List of Published Work in My Bibliography:  
<https://www.ncbi.nlm.nih.gov/myncbi/1VgYzYESn3Nke9/bibliography/public/>

**D. Scholastic Performance**

| YEAR | COURSE TITLE | GRADE |
| --- | --- | --- |
|  | | |
|  |  |  |
|  | GEorgetown University |  |
| 2013 | Seminar in Molecular Biology | P |
| 2013 | Basic Biomedical & Biological Sciences | P |
| 2014 | Model Systems | P |
| 2014 | Statistics for the Life Sciences | P |
| 2014 | Current Topics in Molecular Genetics | P |
| 2015 | Ethics in Biological Research | CRE |
| 2015 | Biochemistry | P |
| 2015 | Physiology | P |
| 2016 | Seminar in Systems Biology | P |
| 2016 | Protein Chemistry | P |
|  |  |  |

Except for the scientific ethics course, Georgetown University graduate courses are graded P (pass) or F (fail). Passing is C plus or better. The scientific ethics course is graded CRE (credit) or NC (no credit). Students must attend at least seven of the eight presentation/discussion sessions for credit.