OMB No. 0925-0001 (Rev. 08/12 Approved Through 8/31/2015)

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| APPLICANT BIOGRAPHICAL SKETCHUse only for individual predoctoral and postdoctoral fellowships, dissertation research grants (R36), and for Research Supplements to Promote Diversity in Health-Related Research (Admin Suppl). DO NOT EXCEED FIVE PAGES. |
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| NAME OF APPLICANTLeilani Robertson-Chang  | POSITION TITLEPostdoctoral researcher |
| eRA COMMONS USER NAME (credential, e.g., agency login)RobertsonL |
| EDUCATION/TRAINING: *(Most applicants will begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. High school students should list their current institution and associated information.)* |
| INSTITUTION AND LOCATION | DEGREE*(if applicable)* | START DATE MM/YYYY | END DATE (*or expected end date*) MM/YYYY  | FIELD OF STUDY |
| Swarthmore College | B.S. | 08/1995 | 05/1999 | Engineering |
| UC San Diego | Ph.D. | 08/2001 | 10/2007 | Molecular biology |
| Michigan State University (postdoc) | n/a | 09/2007 | Present | Bioinformatics/ Immunology |
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**NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.**

A. Personal Statement

My long term research interests involve the development of a comprehensive understanding of key developmental pathways and how alterations in gene expression contribute to human disease. 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 was able to conduct 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 for 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 for 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 be 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 man. 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.

B. Positions and Honors

| ACTIVITY/OCCUPATION | STARTDATE (MM/YYYY) | ENDDATE (MM/YYYY) | FIELD | INSTITUTION/COMPANY | SUPERVISOR/EMPLOYER |
| --- | --- | --- | --- | --- | --- |
| Engineer | 08/99 | 06/01 | Structural engineering | The IBeam Group | Sandip Mehta |
| Postdoc | 10/07 | 12/07 | Molecular biology | UC San Diego | G. Chadwick Murray |
| Postdoc | 01/08 | Present | Bioinformatics/Immunology | Michigan State University | I.M. Creative |
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Academic and Professional Honors

Daughters of Hawaii Scholarship, 1995-1997

National Merit Scholarship, 1995-1999

Paula F. Laufenberg award for best senior project in the Department of Engineering, Swarthmore College, 1999

B.S. awarded with high honors, Swarthmore College, 1999

STAR award for public service in engineering, The IBeam Group, 2001

Ford Foundation Predoctoral Fellowship for Minorities, 2002-2005

Memberships in Professional Societies

Sigma Xi

Association for Women in Science

National Society for Bioinformatics and Biotechnology

C. Contributions to Science

I. 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.

Research papers

Lorentson, C., Robertson-Chang, L., Sauer, N., and Mehta, S. 2000. Use of high-tensile concrete in cantilevered structures. J. Applied Engineering 63, 413-424.

Abstracts

Robertson-Chang, L. and Janessa, A.J. 1998. Redesigning the Golden Gate bridge. Abstract for poster presentation, National Undergraduate Symposium on Science and Engineering, Baltimore, MD.

II. 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 for 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.

Research papers

Robertson-Chang L and Auguri, T. 2004. A tandem affinity purification tag approach allows for isolation of interacting proteins in *Saccharomyces cerevisiae*. Proc Natl Acad Sci U S A. 98, 151-60.

Robertson-Chang L, Schneider K, Chen M, Auguri T. 2006. Rapid Isolation and Characterization of the Most Novel Transcription Complex in *Saccharomyces cerevisiae* and its role in transcription elongation. Cell. 128, 770-9.

Abstracts

Robertson-Chang L and Auguri, T. A tandem affinity purification tag approach allows for isolation of interacting proteins in *Saccharomyces cerevisiae*. Abstract for poster presentation, 2004 Yeast Genetics and Molecular Biology Meeting, Seattle, Washington, September 2004.

Roberson-Chang L, 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. Oral presentation, 2006 CSHL Meeting on Mechanisms of Eukaryotic Transcription. Cold Spring Harbor, NY, August 2006.

III. 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 melanogastor*. I have shown that specific mutations affecting Rtc lead to disruptions in downstream gene regulation involved in the innate immune response.

Research papers

Robertson-Chang, L., Yager, L.N., and Murray, G.C. 2007. Rtc is an essential component of the Drosophila innate immune response. Genetics 145, 884-891.

Yao, M., Dionne, C.-F., Robertson-Chang, L., and Murray, G.C. 2007. Up-regulation of Drosophila innate immunity genes in response to stress. Science 304, 1754-1756.

Robertson-Chang, L., Cescaloo, Q., and Murray, G.C. 2008. Structural analysis of Drosophila Rtc. In preparation.

Reviews

Robertson-Chang, L. and Murray, G.C. 2006. Stress, flies, and videotape: the Drosophila stress response. Ann. Rev. Physiol. 346, 223-245.

Complete List of Published Work in MyBibliography:

* <http://www.ncbi.nlm.nih.gov/sites/myncbi/collections/public/1tay8xsxteXIw5R2StTcjhq5X/?sort=date&direction=ascending>.

D. Scholastic Performance

| YEAR | SCIENCE COURSE TITLE | GRADE | YEAR | OTHER COURSE TITLE | GRADE |
| --- | --- | --- | --- | --- | --- |
|  |  SWARTHMORE COLLEGE |  |  | SWARTHMORE COLLEGE |  |
| 1996 | Introduction to Molecular Biology | A | 1995 | Introduction to Engineering | A |
| 1996 | Introductory Chemistry I | B | 1995 | Calculus I | A |
| 1996 | Physics for Engineers  | A | 1996 | Calculus II | B |
| 1997 | Introductory Chemistry II | C | 1996 | Structures and Design | A |
| 1997 | Organic Chemistry I | A | 1996 | Linear Algebra | B |
| 1998 | Organic Chemistry II | A | 1997 | Structural Materials | B |
| 1998 | Biochemistry | A | 1997 | Structural Materials Laboratory | A |
| 1999 | Cell Biology  | A | 1997 | Numerical Computation & Graphics Tools  | A |
|  |  |  | 1997 | Engineering Graphics and Computer- Assisted Design | A |
|  | UC SAN DIEGO  |  | 1997 | Principles of Structural Design I  | B |
| 2001 | Seminar in Genetics | P | 1997 | Statistics, Probability, and Reliability | A |
| 2002 | Statistics for the Life Sciences | P | 1998 | Principles of Structural Design II | A |
| 2003 | Ethics in Biological Research | CRE | 1999 | Senior Project  | A |
| 2004 | Seminar in Physiology & Behavior | P |  |  |  |
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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.