

BIOGRAPHICAL SKETCH

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NAME: Robertson-Chang, Leilani

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

POSITION TITLE: Postdoctoral Researcher

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	END DATE MM/YYYY	FIELD OF STUDY
Swarthmore College	BS	08/1995	05/1999	Engineering
UC San Diego	PHD	08/2001	09/2007	Molecular Biology
Michigan State University	NIH training grant	09/2007	present	Bioinformatics/Immunology

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.

1. Robertson-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. CSHL Meeting on Mechanisms of Eukaryotic Transcription; 2009 August; Cold Spring Harbor, NY.
2. Robertson-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. *Cell*. 2006; 128:770.
3. Robertson-Chang L, 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*. 2004; 98:151.

B. Positions and Honors

Positions and Employment

1999 - 2001 Engineer, The IBeam Group
2007 - 2007 Postdoctoral Researcher, UC San Diego
2008 - Postdoctoral Researcher, Michigan State University

Other Experience and Professional Memberships

1997 - Member, Sigma Xi
2000 - Member, Association for Women in Science
2002 - Member, National Society for Bioinformatics and Biotechnology

Honors

1995 - 1997 Scholarship, Daughters of Hawaii Society
1995 - 1999 Scholarship, National Merit Scholarship Program
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
2001 STAR award for public service in engineering, The IBeam Group
2002 - 2005 Predoctoral Fellowship for Minorities, Ford Foundation

C. Contribution 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.
 - a. Lorentson C, Robertson-Chang L, Sauer N, Mehta S. Use of high-tensile concrete in cantilevered structures. *J Applied Engineering*. 2000; 63:413.

- b. Robertson-Chang L, Janessa AJ. Redesigning the Golden Gate bridge. National Undergraduate Symposium on Science and Engineering; 1998; Baltimore, MD. c1998.
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 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.
- a. Robertson-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. CSHL Meeting on Mechanisms of Eukaryotic Transcription; 2009 August; Cold Spring Harbor, NY.
 - b. Robertson-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. *Cell*. 2006; 128:770.
 - c. Robertson-Chang L, Auguri T. A tandem affinity purification tag approach allows for isolation of interacting proteins in *Saccharomyces cerevisiae*. Yeast Genetics and Molecular Biology Meeting; 2004 September; Seattle, WA.
 - d. Robertson-Chang L, 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. 2004; 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*.
- a. Robertson-Chang L, Cescaloo Q, Murray GC. Structural analysis of *Drosophila* Rtc. *Nature*. Forthcoming;
 - b. Robertson-Chang L, Yager LN, Murray GC. Rtc is an essential component of the *Drosophila* innate immune response. *Genetics*. 2007; 145:884.
 - c. Yao M, Dionne CF, Robertson-Chang L, Murray GC. Up-regulation of *Drosophila* innate immunity genes in response to stress. *Science* (New York, N.Y.). 2007; 304:1754.
 - d. Robertson-Chang L, Murray GC. Stress, flies, and videotape: the *Drosophila* stress response. *Annual review of physiology*. 2006; 346:223.

Complete List of Published Work in My Bibliography:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/collections/public/1tay8xsxteXlw5R2StTcjhq5X>

D. Additional Information: Research Support and/or Scholastic Performance

Scholastic Performance

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