

CURRICULUM VITAE

Amie Jo McClellan, Ph.D.

PERSONAL INFORMATION

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EDUCATION

- Postdoctoral Fellow
Stanford University Stanford, CA July 2000 – June 2005
Principal Investigator: Judith Frydman, Ph.D.
Research Foci: 1) Cytosolic Quality Control: An Active Role For Molecular Chaperones?
2) Identifying Novel Cellular Functions of Hsp90 Using Systems Approaches
- University of Pittsburgh Pittsburgh, PA September 1994 - April 2000
Program of study: Molecular, Cellular, and Developmental Biology Ph.D. conferred April 2000
Principal Investigator: Jeffrey L. Brodsky, Ph.D.
Thesis Title: The Role of Molecular Chaperones in Protein Translocation into the Yeast Endoplasmic Reticulum
- Chatham College Pittsburgh, PA September 1990 - May 1994
B.S. Biology May 1994

PROFESSIONAL EXPERIENCE

- Cell Biology and Genetics Faculty Member
Bennington College Bennington, VT August 2006 - Present
- Life Sciences Research Associate
Stanford University Stanford, CA July 2005 – July 2006
Principal Investigator: Judith Frydman, Ph.D.

FELLOWSHIPS, HONORS AND AWARDS

- Faculty Commencement Speaker, Bennington College June 2010
- National Institutes of Health National Research Service Award
(Approved for full 3 years of funding) March 2002 – August 2003
- Stanford University Cancer Biology Postdoctoral Fellowship (NIH) July 2000 – February 2002
- Andrew Mellon Pre-Doctoral Fellowship September 1999 - April 2000
- Director's Award for Scientific Excellence and Potential,
University of Pittsburgh Cancer Institute Scientific Retreat July 1998

- Department of Defense Pre-Doctoral Breast Cancer Training Fellowship Sept. 1996 - August 1998
- Graduated *cum laude* May 1994
- National Science Foundation summer undergraduate research grant: Neural Processes in Cognition Summer 1992
- National Merit Scholarship 1990 - 1994
- Chatham College Divisional Scholarship in Science 1990 - 1994

INDEPENDENT RESEARCH FUNDING

- National Institutes of Health R15 AREA Grant (GM087654-01) 2009-2012
Award amount \$237,038 (Direct costs \$150,000; Indirect costs \$87,038)

PUBLICATIONS

Ammons, L. M., L. R. Bingham, S. Callery, E. Corley, K. A. Crowe, J. K. Lipton, C. A. Mendez, T. Morrison, C. Rallis, and A. J. McClellan. 2015. Yeast require an intact tryptophan biosynthesis pathway and exogenous tryptophan for resistance to sodium dodecyl sulfate. *Journal of Student Research* **4**: 74-82.

McClellan, A. J. 2012. Quality Control of Protein Folding in the Cytosol. In: Encyclopedia of Life Sciences (ELS). John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0020886.pub2

Franzosa, E., V. Albanese, J. Frydman, Y. Xia and A.J. McClellan. 2011. Heterozygous yeast deletion collection screens reveal essential targets of Hsp90. *PLoS ONE* **6(11)**: e28211

McClellan, A. J. 2008. Quality Control of Protein Folding in the Cytosol. In: Encyclopedia of Life Sciences (ELS). John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0020886. 2012.

McClellan, A. J., Y. Xia, , A. M. Deutschbauer, R. W. Davis., M. Gerstein, and J. Frydman. 2007. Diverse cellular functions of the Hsp90 molecular chaperone uncovered using systems approaches. *Cell* **131**: 121-35.

Spiess, C., E. J. Miller, A. J. McClellan, and J. Frydman. 2006. Identification of the TRiC/CCT Substrate Binding Sites Uncovers the Function of Subunit Diversity in Eukaryotic Chaperonins. *Mol. Cell* **24**: 25-37.

McClellan, A. J., S. Tam, D. Kaganovich, and J. Frydman. 2005. Protein Quality Control: Chaperones Culling Corrupt Conformations. *Nat. Cell Biol.* **7**: 736-741.

McClellan, A. J., M. D. Scott, and J. Frydman. 2005. Folding and Quality Control of the VHL Tumor Suppressor Proceed Through Distinct Chaperone Pathways. *Cell* **121**: 739-748.

Melville M. W., A. J. McClellan, A. S. Meyer, A. Darveau, and J. Frydman. 2003. The Hsp70 and TRiC/CCT chaperone systems cooperate in vivo to assemble the von Hippel-Lindau tumor suppressor complex. *Mol. Cell. Biol.* **9**: 3141-3151.

McClellan, A. J. and J. Frydman. 2001. Molecular Chaperones and the Art of Recognizing a Lost Cause. *Nat. Cell Biol.* **3(2)**: E51-3.

McClellan, A. J. and J. L. Brodsky. 2000. Mutation of the ATP-Binding Pocket of SSA1 Indicates That a Functional Interaction Between Ssa1p and Ydj1p is Required for Post-translational Translocation Into the Yeast Endoplasmic Reticulum. *Genetics* **156**: 501-512

McClellan, A. J., J. B. Endres, J. P. Vogel, D. Palazzi, M. D. Rose, and J. L. Brodsky. 1998. Specific Molecular Chaperone Interactions and an ATP-dependent Conformational Change are Required During Post-Translational Translocation into the Yeast Endoplasmic Reticulum. *Mol. Biol. Cell* **9**: 3533-3545.

Brodsky, J. L., M. Bäuerle, M. Horst, and A. J. McClellan. 1998. Mitochondrial Hsp70 Cannot Replace BiP in Driving Protein Translocation into the Yeast Endoplasmic Reticulum. *FEBS Lett.* **435**: 183-186.

Srinivasan, A., A. J. McClellan, J. Vartikar, I. Marks, P. Cantalupo, Y. Li, P. Whyte, K. Rundell, J. L. Brodsky, and J. M. Pipas. 1997. The Amino-Terminal Transforming Region of Simian Virus 40 Large T and Small t Antigens Functions as a J Domain. *Mol. Cell. Biol.* **17**: 4761-4773.

SCIENTIFIC CONFERENCE PRESENTATIONS

INVITED TALKS

Emc2 – Novel Hsp90 Co-chaperone? FASEB Protein Folding in the Cell Summer Research Conference. 2014. Saxtons River, VT

Heterozygous yeast deletion collection screens aimed at revealing essential Hsp90 substrates and functions. Midwest Stress Response and Molecular Chaperone Meeting. 2010. Northwestern University, Evanston, IL

Uncovering the Essential Cellular Substrates and Functions of Hsp90 with Genome-wide Screens. American Society for Cell Biology annual meeting. 2007. Washington D.C.

Genome-wide Screens Uncover the Essential Cellular Functions and Substrates of the Hsp90 Molecular Chaperone. American Society for Cell Biology annual meeting. 2005. San Francisco, CA

A Genome-Wide Screen to Identify Cellular Targets of the Hsp90 Chaperone. 2004. Stanford Department of Biological Sciences Retreat. Asilomar, CA

Role of Molecular Chaperones in Quality Control of Folding Mutants of the VHL Tumor Suppressor Protein. American Society for Cell Biology annual meeting. 2003. San Francisco, CA

Characterization of new *SSA1* mutants indicates that a functional interaction between Ssa1p and Ydj1p is required for post-translational translocation into the ER. Midwest Stress Response and Chaperone Meeting. 2000. Chicago, IL

The Requirement for ATP and Specific hsc70-DnaJ Homolog Interactions for Protein Translocation into the Yeast Endoplasmic Reticulum. Mid-Atlantic Yeast Meeting. 1997. Pittsburgh, PA

POSTER PRESENTATIONS

Kudze T., Mendez, C., Jalloh C. and A.J. McClellan. Emc2p - a putative novel Hsp90 co-chaperone. Midwest Stress Response and Molecular Chaperone Meeting. 2015. Northwestern University, Evanston, IL

Kudze T. and A.J. McClellan. *EMC2* encodes a putative novel Hsp90 co-chaperone in *Saccharomyces cerevisiae*. American Society for Cell Biology annual meeting. 2012. San Francisco, CA

Kougentakakis, C.M. and A.J. McClellan. Exploring GTP binding proteins as a novel class of Hsp90 substrates. FASEB Protein Folding in the Cell Summer Research Conference. 2012. Saxtons River, VT

Franzosa, E., V. Albanese, J. Frydman, Y. Xia and A.J. McClellan. Heterozygous yeast deletion collection screens reveal essential cellular actions of Hsp90. Gordon Conference on Stress Proteins in Growth, Development, and Disease. 2011. Il Ciocco Hotel and Resort, Lucca (Barga), Italy

McClellan, A.J., V. Albanèse, A. Plocik, M. Bergkessel, C. Guthrie, and J. Frydman. Characterization of *cwc23Δ* yeast reveals J-domain independent effects on pre-mRNA splicing and proteasome function. The Gordon Research Conference for Stress Proteins in Growth, Development, and Disease. 2009. Andover, NH

Franzosa, E., Y. Xia, J. Frydman and A.J. McClellan. Heterozygous yeast deletion collection screens aimed at revealing essential Hsp90 substrates and functions. FASEB Protein Folding in the Cell Summer Research Conference. 2008. Saxtons River, VT

McClellan, A. J., Y. Xia, A.M. Deutschbauer, R.W. Davis, M. Gerstein, and J. Frydman. Genome-wide Screens Uncover the Essential Cellular Functions and Substrates of Hsp90. Molecular Chaperones and the Heat Shock Response. 2006. Cold Spring Harbor, NY

McClellan, A. J. and J. Frydman. The Von Hippel-Lindau Tumor Suppressor as a Model Substrate for the Degradation of Misfolded Cytosolic Proteins in Yeast. Molecular Chaperones and the Heat Shock Response. 2002. Cold Spring Harbor, NY

McClellan, A. J. and J. Frydman. The Von Hippel-Lindau Tumor Suppressor as a Model Substrate for the Degradation of Misfolded Cytosolic Proteins in Yeast. The First International Conference on Ubiquitin, Ubiquitin-Like Proteins, and Cancer. Houston, TX

Fewell, S. W., A. J. McClellan, J. M. Pipas, and J. L. Brodsky. The Chaperone Activity of SV40 Large T Antigen And Its Role In Tumorigenesis. University of Pittsburgh Cancer Institute Annual Scientific Retreat. 1999. Johnstown, PA

McClellan, A. J., S. W. Fewell, J. M. Pipas, and J. L. Brodsky. The Amino-Terminus of SV40 T Antigen is a Functional DnaJ Chaperone. Annual Midwest Stress Response and Chaperone Meeting. 1999. Chicago, IL

McClellan, A. J., J. M. Pipas, and J. L. Brodsky. The Amino-Terminus of SV40 T Antigen is a Functional DnaJ Chaperone. University of Pittsburgh Cancer Institute Annual Scientific Retreat. 1998. Johnstown, PA

McClellan, A. J., J. B. Endres, and J. L. Brodsky. The Requirement for ATP and Specific hsc70-DnaJ Homolog Interactions for Protein Translocation into the Yeast Endoplasmic Reticulum. American Society for Cell Biology. Annual Meeting. 1997. *Mol. Biol. Cell* 8(S): 197a. Washington, D.C.

McClellan, A. J., J. B. Endres, and J. L. Brodsky. The Requirement for ATP and Specific hsc70-DnaJ Homolog Interactions for Protein Translocation into the Yeast Endoplasmic Reticulum. University of Pittsburgh Cancer Institute Annual Scientific Retreat. 1997. Johnstown, PA

McClellan, A., J. Endres, and J. L. Brodsky. Determination and Comparison of ATPase Activities and Protein Substrate Binding of Yeast Cytosolic and ER Luminal hsc70s. University of Pittsburgh Cancer Institute Annual Scientific Retreat. 1996. Johnstown, PA

McClellan, A., J. Endres, and J. L. Brodsky. Determination and Comparison of ATPase Activities and Protein Substrate Binding of Yeast Cytosolic and ER Luminal hsc70s. Mid-Atlantic Yeast Meeting. 1996. Baltimore, MD

INVITED ACADEMIC TALKS

Going Big: Genome-wide screens to elucidate Hsp90 interactors. Department of Molecular Medicine, Cornell University. April 7th, 2014.

Heterozygous yeast deletion collection screens aimed at revealing essential Hsp90 substrates and functions. University for Applied Sciences. Berlin, Germany. December 17th, 2010.

Expanding the Cellular Scope of Essential Hsp90 Functions and Substrates with Systems Approaches. Department of Molecular Biology, Cell Biology and Biochemistry, Brown University, March 17th, 2010.

Expanding the Cellular Scope of Essential Hsp90 Functions and Substrates with Systems Approaches. Department of Molecular Genetics and Microbiology, The University of Texas at Austin. April 16th, 2010.

Expanding the Cellular Scope of Hsp90 Functions and Substrates with Systems Approaches. Department of Molecular Biology and Biochemistry, University of Massachusetts, Amherst, January 20th, 2009.

Expanding the Cellular Scope of Hsp90 Functions and Substrates with Systems Approaches. Department of Cell Biology, Columbia University, February 18th, 2009.

INVITED COMMUNITY TALKS

Talk title: Mutation, and why, because all life on Earth utilizes the same genetic code, the ability of one organism to express genes of another is more science fact than science fiction. Given before a screening of David Cronenberg's "The Fly", as part of Amherst Cinema's Science on Screen series. October 17th, 2011.

TEACHING AND MENTORING EXPERIENCE

- Bennington College Fall 2006-Present

Currently developing an advanced course titled **Protein Research Methods** to implement in Fall 2016.

Designed and taught Genome Jumpstart, a new entry-level course on genomes and bioinformatics.

Designed and taught Introduction to Cancer Biology, a new entry-level course.

Designed and taught Environmental Microbiology, a new upper level course.

Designed and taught Introduction to Cell Biology with an accompanying laboratory. I also revised this course and taught it in a 5-week summer intensive session for post-baccalaureate pre-med students

Designed and taught a new primary literature-based course, **Micro-organisms, Macro-science** which had a research project-based component in following term.

Co-designed and co-taught a course with anthropologist Dr. Miroslava Prazak called **The AIDS Pandemic: The Science, Cultures, and Politics of HIV/AIDS**.

Designed and taught Genetics with an accompanying laboratory in which the students perform genome-wide chemical genetic screens using the homozygous or heterozygous diploid yeast deletion collections.

Designed and supervised several independent student research projects in the context of an advanced course titled **Research in Cell Biology**

Designed and taught an advanced topics in **Cell Biology** course called **The Life and Death of Proteins**. This was a primary literature-based course following the fates of proteins from their synthesis, targeting and translocation, to their ultimate degradation.

Designed and taught a new entry-level course entitled **Mutants: Genetic Variation and Human Development**, which covers basic aspects of how genes and proteins work in the cell to guide developmental processes and how, when disrupted, human mutations result.

Designed research projects and **supervised** numerous undergraduate students in the laboratory during Field Work Terms and summers, as well as for senior advanced work projects and research tutorials.

- Stanford University

July 2000- June 2006

Summer 2005

Served as a **laboratory mentor** for the **Stanford Summer Research Program**. Designed research project for an undergraduate student to execute during the summer. Established background reading list, developed protocols, worked side-by-side with the student on a daily basis to develop their research skills, and assisted with the preparation of a final poster and oral presentation.

Summer 2004

Served as a **Program Assistant** for the **Stanford Summer Research Program**. Developed syllabus for weekly meetings with participating undergraduates, led journal club presentations and discussions, mentored students throughout the program to assist their scientific development, especially with regards to good work habits and creating effective poster and Powerpoint presentations of their summer research.

Summer 2002 and Summer 2003

Mentored undergraduates from California State University Hayward participating in the **NIH Bridges to the Future** program. Designed summer research projects for the students and worked side-by-side with them in the laboratory on a daily basis to develop their research skills. Assisted with development of their final presentations.

Spring 2003

Teaching Assistant for the graduate level course The Life and Death of Proteins. Aided in development of course content and syllabus, critiqued student assignments, assisted with preparation of students' presentations, led class discussion, presented course material.

Summer 2000- Spring 2006

Mentored undergraduates, master's degree students, and rotating Ph.D. students in the laboratory. Aided in project design, troubleshooting, and execution of experimental protocols.

- University of Pittsburgh

Fall 1995-Spring 2000

Fall 1995 and Spring 1999

Teaching Assistant for the undergraduate genetics course in the Department of Biological Sciences. Responsible for conducting three recitation sections per week which focused on problem solving skills in genetics and clarifying material presented in lecture. Held weekly office hours to assist students with understanding concepts and problem sets. Tutored genetics during non-teaching semesters.

Fall 1995 - Spring 2000

Mentored undergraduates and rotating graduate students in the laboratory. Aided in project design, troubleshooting, and execution of experimental protocols.

- Chatham College

Fall 1992 - Spring 1994

Peer tutor of basic math skills, algebra, and calculus for math skills workshops.