

SARAH MUTKA
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SUMMARY

Experienced Ph.D. level cell biologist with 17 years research experience including seven years in the biotechnology industry. Broad scientific research expertise including cancer cell biology, molecular biology, and biochemistry. Strong project management and communication skills from experience as project lead for a multidisciplinary early stage oncology research project.

RESEARCH EXPERIENCE

KOSAN BIOSCIENCES, Hayward, CA

2001-2008

Kosan Biosciences is an established cancer therapeutics company focused on advancing two new classes of anticancer agents through clinical development: heat shock protein 90 (Hsp90) inhibitors and epothilones.

Senior Scientist

2006-2008

- Two years as project leader for multidisciplinary early stage oncology research project with 8 FTEs in Chemistry, Biology, and Pharmacology. Validated nuclear export as a target for anti-cancer therapeutics. These efforts led to project expansion and the identification of several lead candidates that are currently in evaluation for clinical development.
 - Developed and conducted cell based assays including cytotoxicity screening, cellular proliferation assays, apoptosis studies, cell cycle analysis, and quantitative fluorescence microscopy.
 - Implemented immunofluorescence based assays to analyze efficacy of drug treatment in *in vivo* hollow fiber mouse model.
 - Co-wrote NIH Small Business Innovation Research (SBIR) grant application.
 - Managed external collaborations.
 - Supervised several Research Associates.

Scientist II

2004-2006

- Cloned and expressed human kinases using baculovirus/insect cell culture to support biochemical assays for early stage kinase inhibitor project.
- Redesigned and synthesized genes encoding the entire epothilone cluster to achieve heterologous expression of epothilones in *E. coli* (clinically important anti-cancer compounds). Utilized a combination of lowered temperature, chaperone co-expression, and alternative promoters to produce soluble protein from all of the epothilone genes leading to the *de novo* production of epothilones C and D.

Scientist I

2001-2003

- Cloned and expressed numerous metabolic pathway genes and a polyketide synthase for expression in *S. cerevisiae* leading to production of a complex polyketide product in yeast

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

1992-2000

- Predoctoral fellow, Howard Hughes Medical Institute, laboratory of Dr. Peter Walter
- Developed biochemical, molecular, and genomics techniques to study protein translocation in a yeast genetic system. Combined these techniques with DNA microarray technology to describe the adaptive response to the loss of the SRP translocation pathway in yeast.

INDIANA UNIVERSITY-BLOOMINGTON

1990-1992

- Undergraduate researcher, laboratory of Dr. Gary Janssen. Studied translation efficiency of *Streptomyces* genes using *E. coli*.

THE JACKSON LABORATORY, Bar Harbor, ME

1991

- Summer Research Student, laboratory of Dr. Beverly Paigen. Performed mouse genome mapping experiments by RAPD-PCR (randomly amplified polymorphic DNA polymerase chain reaction). Designed and executed *in vivo* studies on effect of diet on gallstone formation in mice.

CASE WESTERN RESERVE UNIVERSITY, Cleveland, OH

1990

- Summer Research Intern, laboratory of Dr. M. Edward Medof. Analyzed lipid profiles in GPI-anchor deficient cell lines using TLC to identify defects in the biosynthetic pathway of the glycolipid anchor in mammalian cells.

FELLOWSHIPS AND AWARDS

- Howard Hughes Medical Institute predoctoral fellowship
- Phi Beta Kappa
- Howard Hughes Undergraduate Initiative Award for undergraduate researchers
- Fernandus & Elizabeth Payne Scholarship (Indiana Univ. Department of Biology Award)

TECHNICAL SKILLS

- **Cell Biology**-Fluorescence microscopy; Cellomics ArrayScan; flow cytometry; cell culture; cytotoxicity screening; apoptosis assays; cell cycle analysis; transfection; immunohistochemistry (IHC)
- **Biochemistry**-Heterologous protein expression; SDS-PAGE; Western blotting; immunoprecipitation (native and denaturing); affinity purification of antibodies and antigens; *in vitro* enzymatic assays; analysis of acyl-coenzyme A pools by HPLC;
- **Molecular Biology**-microarray technology including RNA and mRNA preparation; cDNA probe labeling; RT-PCR; array printing and hybridization; data analysis; northern blotting; DNA cloning and subcloning; PCR; gene synthesis by oligonucleotide assembly

TEACHING EXPERIENCE:

- Science & Health Education Partnership
 - City Science Summer Institute 1998
Instructed new elementary school teachers in the usage of kit-based science curriculum units designed to support student inquiry in the classroom.
 - Women's Triad Project 1995-1997
Formed an after-school girls' science club with a middle school teacher in a partnership between the San Francisco Unified School District and UCSF.
- Discussion Group Leader, UCSF medical school 1993

EDUCATION

- **Ph. D. in Biochemistry** 2000
University of California, San Francisco, laboratory of Dr. Peter Walter
- **B.S. in Microbiology with highest distinction** 1992
Indiana University, Bloomington

PUBLICATIONS:

Mutka, S. C., Yang, W. Q., Dong, S. D., Ward, S. L., Craig, D. A., Timmermans, P. B. M. W. M., and S. Murli. "Identification of nuclear export inhibitors with potent anticancer activity *in vivo*." Submitted to Cancer Research.

Katz, L., Kennedy, J., **Mutka, S. C.**, Carney, J. R., MacMillan, K. S., and S. Murli. "Novel polyketides from genetic engineering (...and lessons we have learned from making them)." Polyketides: Biosynthesis, Biological Activity, and Genetic Engineering. Eds. S. Baerson, A. Rimondo. Washington, DC: American Chemical Society Publications, 2007. 200-216.

Mutka, S. C., Carney, J. R., Liu, Y. and J. Kennedy. 2006. "Heterologous production of epothilones C and D in *Escherichia coli*." Biochemistry 45(4); 1321-1330.

Mutka, S. C., Bondi, S. M., Carney, J. R., DaSilva, N. A., and J. T. Kealey. 2006. "Metabolic Pathway Engineering for Complex Polyketide Biosynthesis in *S. cerevisiae*." FEMS Yeast Research 6(1):40-7.

Mutka, S. C., and P. Walter. 2001. "Multifaceted Physiological Response Allows Yeast to Adapt to the Loss of the Signal Recognition Particle-dependent Protein-Targeting Pathway." Molecular Biology of the Cell 12: 577-588.

Fawaz, F. S., C. van Ooij, E. Homola, **S. C. Mutka**, and J. N. Engel. 1997. "Infection with *Chlamydia trachomatis* alters the tyrosine phosphorylation and/or localization of several host cell proteins including cortactin." Infection and Immunity 65: 5301-5308.

Hirose, S., R. P. Mohney, **S. C. Mutka**, L. Ravi, D. R. Singleton, G. Perry, A. M. Tartakoff, and M. E. Medof. 1992. "Derivation and characterization of glycoinositol-phospholipid anchor-defective human K562 cell clones." Journal of Biological Chemistry 267(8): 5272-8.

Oral and Poster presentations:

Selected for oral presentation:

Sarah Mutka, Shannon Ward, Christopher Carreras, WenQing Yang, Yaoquan Liu, Hong Fu, Yong Li, Robert G. Johnson Jr., Pieter Timmermans, and Sumati Murli. Mechanistic analyses of the therapeutic activity of nuclear export inhibitors (NEIs) in cancer. AB-1591. Small Molecule Inhibitors of Novel Targets Minisymposium Session. AACR Annual Meeting. San Diego, CA . April 13, 2008.

Sarah Mutka, Shannon Ward, WenQing Yang, Yiqing Zhou, Yunfei Chen, Sumati Murli, Robert G. Johnson, Jr., and Pieter Timmermans. Nuclear Export Inhibitors (NEIs) as Novel Cancer Therapeutics. AB-5609. AACR Annual Meeting. Los Angeles, CA April 2007.

Sarah Mutka,* Steven D. Dong,* Rishali Gadkari, Yiqing Zhou, Yunfei Chen, WenQing Yang, Darren Craig, Jessica Gibson, Ziyang Zhong, Sumati Murli, Pieter Timmermans, and Daniel Santi. Nuclear Export Inhibitors as Novel Cancer Therapeutics. LB-276. AACR 97th Annual Meeting. Washington, DC April 2006.

Selected for oral presentation:

Sarah Mutka,* Steven D. Dong,* Yiqing Zhou, Darren Craig, Ziyang Zhong, Rishali Gadkari, Yunfei Chen, Michael Sun, Fenghua Liu, Sumati Murli, Pieter Timmermans, and Daniel Santi. Nuclear Export Inhibitors as Novel Cancer Therapeutics. GTCbio 3rd Annual Cancer Drugs Research and Development meeting. San Francisco, CA February 2006.