

VINCENT JOSEPH STARAI, PH.D.

Assistant Professor, The University of Georgia
Departments of Microbiology and Infectious Diseases
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Education

2004-2009 Damon Runyon Postdoctoral Fellow, Dartmouth Medical School
1998-2004 Ph.D. University of Wisconsin-Madison (Microbiology)
1994-1998 B.S. University of Illinois at Urbana-Champaign (Microbiology)

Honors and Awards

2012 Provost's Summer Research Award (University of Georgia)
2008 E. Lucile Smith Award for Excellence in Biochemistry: Given annually to the graduate student and the postdoctoral fellow who have best demonstrated scientific excellence in Biochemistry. (Dartmouth Medical School)
2007-2009 NIH Autoimmunity and Connective Tissue Training Grant Award (Dartmouth Medical School)
2004-2007 Damon Runyon Cancer Research Foundation Fellow
2003 Department of Bacteriology Chair's Award: Recognizes a graduate student displaying outstanding achievements in their graduate career, and exhibits great potential for success in a post-graduate academic career. (University of Wisconsin-Madison)
2003 Gamma Sigma Delta Agricultural Honor Society Member (University of Wisconsin-Madison)
2002-2004 Pfizer Predoctoral Fellow
2001 Jerome J. Stefaniak Predoctoral Fellowship (University of Wisconsin-Madison)

Research Experience and Positions

Assistant Professor, 2009-Present

University of Georgia, Departments of Microbiology and Infectious Diseases

Postdoctoral Fellow, 2004-2009

Dartmouth Medical School, Department of Biochemistry
Advisor: William T. Wickner, MD

Research Assistant, 1998-2004 (Ph.D. thesis)

University of Wisconsin-Madison, Department of Bacteriology
Advisor: Jorge C. Escalante-Semerena, Ph.D.

Professional Services

2010 *Ad hoc* reviewer, *Proceedings of the National Academy of Sciences*
2011- Review Editor, *Frontiers in Cellular and Infection Microbiology*

Invited Speaker

- 2011 University of Texas-Southwestern Medical Center (host, Dr. Kim Orth)
2011 University of Georgia, Department of Cell Biology (host, Dr. Kojo Mensa-Wilmot)
2012 Georgia Health Sciences University, Department of Cellular Biology and Anatomy (host, Dr. Paul McNeil)

Publications

Postdoctoral publications

Terry M. Bennett, S.M. Kraft, B.J. Reaves, J. Mima, K.M. O'Brien, and **V.J. Starai**. 2013. LegC3, an effector protein from *Legionella pneumophila*, inhibits homotypic yeast vacuole fusion *in vivo* and *in vitro*. *PLoS One*. In Press.

Vincent J. Starai, C. M. Hickey, and W. Wickner. 2008. HOPS proofreads the trans-SNARE complex for yeast vacuole fusion. *Mol Biol Cell*. 19:2500-8.

Vincent J. Starai, Y. Jun, and W. Wickner. 2007. Excess vacuolar SNAREs drive lysis and Rab-bypass fusion. *Proc Natl Acad Sci USA* (Feature Article). 104:13551-8.

Youngsoo Jun, N. Thorngren, **V. J. Starai**, R. A. Fratti, K. Collins, and W. Wickner. 2006. Reversible, cooperative reactions of yeast vacuole docking. *EMBO J*. 25:5260-9.

Vincent J. Starai, N. Thorngren, R.A. Fratti, and W. Wickner. 2005. Ion regulation of homotypic vacuole fusion in *Saccharomyces cerevisiae*. *J Biol Chem*. 280:16754-62.

Predoctoral publications

Vincent J. Starai, J. Garrity, and Jorge C. Escalante-Semerena. 2005. Acetate excretion during growth of *Salmonella enterica* on ethanolamine requires phosphotransacetylase (EutD) activity, and acetate recapture requires acetyl-CoA (Acs) and phosphotransacetylase (Pta) activities. *Microbiology*. 151:3793-801.

Vincent J. Starai, J.G. Gardner, and Jorge C. Escalante-Semerena. 2005. Residue Leu-641 of Acetyl-CoA Synthetase is critical for the acetylation of residue Lys-609 by the protein acetyltransferase enzyme of *Salmonella enterica*. *J Biol Chem*. 280:26200-5.

Vincent J. Starai and Jorge C. Escalante-Semerena. 2004. Identification of the protein acetyltransferase (Pat) enzyme that acetylates acetyl-CoA synthetase in *Salmonella enterica*. *J Mol Biol*. 340:1005-12.

Vincent J. Starai and Jorge C. Escalante-Semerena. 2004. Acetyl-Coenzyme A Synthetase (Adenosine Monophosphate-Forming). Review. *Cell Mol Life Sci*. 61:2020-30.

V. J. Starai, H. Takahashi, J. D. Boeke and J. C. Escalante-Semerena. 2004. A Link Between Transcription and Intermediary Metabolism: A Role for Sir2 in the Control of Acetyl-Coenzyme A Synthetase. Review. *Curr Op Microbiol*. 7:115-119.

Sergio Palacios, **Vincent J. Starai**, and Jorge C. Escalante-Semerena. 2003. Propionyl-coenzyme A is a common intermediate in the 1,2-propanediol and propionate catabolic pathways needed for the expression of the *prpBCDE* operon during growth of *Salmonella enterica* on 1,2-Propanediol. *J Bacteriol.* 185:2802-2810.

Andrew M. Gulick, **Vincent J. Starai**, Alexander R. Horswill, Kristen M. Homick, and Jorge C. Escalante-Semerena. 2003. The 1.75 Å crystal structure of acetyl-CoA synthetase bound to adenosine-5'-propylphosphate and coenzyme A. *Biochemistry.* 42:2866-2873.

Vincent J. Starai, Hidekazu Takahashi, Jef D. Boeke, and Jorge C. Escalante-Semerena. 2003. Short-chain fatty acid activation by acyl-coenzyme A synthetases requires SIR2 protein function in *Salmonella enterica* and *Saccharomyces cerevisiae*. *Genetics.* 163:544-555.

V.J. Starai, I. Celic, R.N. Cole, J.D. Boeke, and J. C. Escalante-Semerena. 2002. Sir2-dependent activation of acetyl-CoA synthetase by deacetylation of active lysine. *Science.* 298:2390-2392.

Smith, J. S., C. Baker-Brachmann, I. Celic, M. A. Kenna, S. Muhammad, **V. J. Starai**, J. Avalos, J. C. Escalante-Semerena, C. Grubmeyer, C. Wolberger, and J. D. Boeke. 2000. A phylogenetically conserved NAD⁺-dependent protein deacetylase in the Sir2 protein family. *Proc Natl Acad Sci USA.* 97:6658-6663.

Research Support

ACTIVE

NIH/NIAID 1 R01 AI 100913 (Role, PI)

1/1/2013-12/31/17

“Bacterial Inhibitors of Eukaryotic Membrane Fusion”

The major goals of this project are to characterize the biochemical effects of certain secreted proteins from bacterial pathogens on eukaryotic SNARE-dependent membrane fusion pathways.

Total Direct Costs: \$1,012,500