

## Curriculum vitae

Steven Alan Enkemann  
Assistant Professor

<b>Education:</b>	1994	Ph.D.	University of Kentucky	Molecular Virology
	1988	M.S.	Purdue University	Biology
	1979	B.S.	University of Michigan	Biology

### **Current Position:**

**Assistant Professor, Department of Cell Biology and Physiology, Edward Via College of Osteopathic Medicine, Spartanburg Campus**

**Director of Laboratory Operations, Precision Genetics**

### **Previous positions:**

May 2015 – August 2016      **Director, New Assay Development, Selah Genomics**

Directing a laboratory of 4-6 individuals processing patient samples to determine individual genotypes or the presence of infectious agents using molecular techniques. This includes PCR, microarrays, Sanger sequencing, and NextGen sequencing. Processed oncology related samples. Analyzed NGS sequencing data and prepared medical reports on mutations associated with tumor samples for both research and clinical samples. Maintained tumor mutation database and interfaced with bioinformatic team on mutation descriptions, report generation, and external interfaces..

2009 – 2012      **Scientific Director, Molecular Genomics Laboratory, Member of the Bill and**

**Beverly Young Functional Genomics Center and Member of the H. Lee Moffitt Cancer Center and Research Institution**

Directed a laboratory of 6-8 individuals working with multiple technologies that are used to assess the genomes and transcriptomes of samples; this includes PCR, microarrays, Sanger sequencing, and NextGen sequencing. Developed new assays for the detections of single SNPs, arrays of SNPs, or whole genomes of SNPs. Developed assays for the assessment of genomic and epigenomic characteristics including, ChipSeq, methylation status, exon enrichment, subtractive hybridization, cellular fractionation. Participated in research projects related to the diagnosis and treatment of tumors from all forms of cancer using genomic technologies. Created companion assays for new drugs in development. Set up analysis pipelines and data processing pipelines for the database storage of genomic and clinical data. Developed a LIMS for the collection of clinical and processing information for clinical specimens. Set up standardized protocols for processing of microarray samples and sequencing samples. Set up robotic systems for the processing of samples. Set up quality control parameters for the evaluation of final data and the identification of causes of failures. Set up laboratory processes, protocols, and documentation for the establishment of a CLIA certified laboratory. Prepared budgets, purchased supplies and equipment, controlled overall expenditures, set service costs, and decided on capital purchases for the lab. Worked on a data warehouse for the storage of both clinical data and genomics data on tumor samples. Directed efforts to create reports and process data from the data warehouse (TCC). Developed interfaces between laboratory instruments and both LIMs and TCC databases.

2001 – 2009     **Director, Microarray Core Laboratory, H. Lee Moffitt Cancer Center and  
Research Institution**

Directed a laboratory of 3-4 individuals working with microarray technology as a Core service for the Institution. Assisted researchers in the experimental design and interpretation of many experiments studying the regulation of gene expression, microRNA expression, human SNPs and other genomic anomalies in the identification of tumor specific defects. Also worked on the neurological effects of addiction, brain trauma, and Alzheimer's, several developmental aspects of heart development, and the identification of pathogenicity factors in both bacteria and plasmodium. Set quality control standards for the standard microarray processes and developed additional assays for the evaluation of intermediate steps to improve the success of microarray processing and to identify precisely why a sample has failed. Worked with Rosetta Inpharmatics to identify tumors for processing, standards for analysis projects, and systems for tumor signature development. Taught courses about whole genome technology and their use in cancer research. Wrote grants for the funding of research projects, instrument purchases, and the support of Core laboratories.

2000 – 2001     **Visiting Professor, University of South Florida**

Performed research involving cell culture, lymphocyte activation, microarray analysis, and biochemical analysis of kinase and ubiquitin activity in studying the regulation of cell cycle progression and T cell activation by the cyclin-dependent kinase inhibitor p27.

1994 –1999     **Post-Doctoral Fellow, National Cancer Institute**

Analysis of the *in vivo* characteristics of the growth associated nuclear protein prothymosin  $\alpha$ . Performed protein purification processes, DNA and RNA isolations, Northern, Southern, and western blotting. Used, cell culture, cloning and cellular transfection, and *in vivo* labeling experiments to study the phosphorylation of prothymosin  $\alpha$ . Used confocal microscopy and flow cytometry to study the cellular localization of prothymosin  $\alpha$  during the cell cycle. Developed monoclonal antibodies and phage display to also create markers for this work.

Aug. 1990 - Sept. 1994     **Research assistant, University of Kentucky**

Reconstitution of a functional VSV transcription complex from cloned genes and the analysis of generated and naturally occurring mutants of the L protein. Used molecular cloning techniques and developed new transfection techniques for the analysis of functional changes to the L and N proteins of VSV. Used PCR and site-directed mutagenesis to create specific mutations. Used insect cultures and a baculovirus expression system to produce viral proteins for the reconstitution of infectious virus transcription complexes.

1988-1989     **Research Assistant, Dept. of Biological Sciences, Purdue University**

1980-1988     **Instructor, Dept. of Biological Sciences, Purdue University**

**Skills:**

Teaching and research experience in the following technologies and subjects: High Throughput technologies including Next Generation Sequencing, microarrays, SNP assays, GWAS analysis, methylation analysis, genomics and epigenetic analysis of the genome. Experience with cloning, transgenic animals, protein expression and isolation techniques, Northern, Westerns, Southern, PCR analysis, qPCR analysis, all forms of microscopy including electron microscopy and confocal microscopy, cell culture (more than 50 different lines), histological analysis of cell and tumors including immunohistochemistry, flow cytometry, and ELISA, protein sequencing, phage display technology, and many other biochemical assays. Teaching, research, and practical experience with genetics, molecular biology, developmental biology, cellular biology, cancer biology, virology, and general microbiology.

Experience with the development of standards for clinical assays, CLIA laboratory set-up, biomarker discovery, development, validation, and clinical assay development, as well as many aspects of personalized medicine. Management experience (20 yrs) in both science and non-science workplaces. Technical writing for users manuals, SOPs, workplace documentation, science publications, books, and grant applications. Some experience with regulatory documentation. Ability to communicate on multiple levels, can coordinate multiple projects; can participate in biological projects from a scientific, technological, or administrative perspective. PERL programming and visual basic.

### **Awards:**

2009	<b>American Association of Cancer Researchers</b>	AACR Highly Rated
Poster	<b>100<sup>th</sup> Annual meeting</b>	
2005	<b>Cancer Bioinformatics Grid</b>	Best integration of CaBig tools
2004	<b>Cambridge Healthtech Institute, Microarray Data Analysis.</b>	Best in show, Poster award
1998-1999	<b>Cancer Research Training Award,</b>	National Cancer Institute
1994-1998	<b>Intramural Research Training Award,</b>	National Cancer Institute
Jan. 1990 - Sept. 1994	<b>Research Assistantship,</b>	Univ. of Kentucky
1989-90 academic year	<b>Teaching Assistantship,</b>	Univ. of Kentucky
1989 (1 year)	<b>Graduate Fellowship,</b>	University of Kentucky
1984 (1 Year)	<b>David Ross Fellowship,</b>	Purdue University

### **Additional positions:**

Editorial board member, 2010 to present  
Journal of Postgenomics: Drug & Biomarker Development

Editorial board member, 2011 to present  
Journal of Metabolomics

Editorial Board Member Feb 2004-to 2008  
Gene Expression (International Journal of Molecular Biology and Neuroscience)

### **Certifications:**

American Society for Clinical Pathology (ASCP) Medical Technologist in Molecular Biology

### **Memberships:**

Former Member of the Moffitt Cancer Center  
American Association for the Advancement of Science

American Association of Cancer Researchers  
National Academy of Inventors

Number: 128733

**Committees served:**

Advisory Board University of South Florida Master's Program in Biotechnology  
Advisory Board University of South Florida Master's Program in Bioinformatics  
Microarray Data Analysis Working Group  
Project LINK candidate evaluation committee  
Research Product Evaluation Committee  
Clinical Career Ladder Review Committee  
Total Cancer Care Pathology Working Group  
Merck-Moffitt Profiling Sub Team  
CaBIG Bioinformatics Committee  
Total Cancer Care IT Project Development Committee  
National Functional Genomics Working Group  
National Functional Genomics Bioinformatics Group  
Research IT Steering Committee  
Microarray Data Analysis Working Group  
Colon 400 Project Development Committee  
Search Committee for development of the proteomics Core at Moffitt  
Epidemiology Faculty Member Search Committee

**Teaching:**

**Courses taught**

Purdue University

BIO 232 – Cell Structure and Function Lab

BIO 439 – General Microbiology Lab

BIO 534 – Medical Microbiology Lab.

University of Kentucky

BIO 209 – Introduction to Microbiology Lab.

University of South Florida

GMS 6889 – Bioinformatics II

BSC 6457 – Cancer Research Techniques

GMS 6847 – Translational Biotechnology

BCH 6135 – Methods in Molecular Biology

GMS 6841 – Fundamentals of Translational Research

**Mentor for Project Link (Leaders in New Knowledge)**

A program to promote minorities in science by mentoring high school students and undergraduates from minority groups. Each student performs an actual research project over the course of a 2 to 4 year program.

Student Derrick Paredes June 2002 to July 2005

Student Andrew Cain June 2007 to May 2009

Student Nia Jackson June 2009 to Present

**Mentor for SPARK program (Summer research program for undergraduates)**

Student Nicholas McKenna Summer 2007 and Summer 2008

Student Heather Belle Summer 2009

Student Kellsey Bishop Summer 2009

Student Ryan Menard Summer 2010

Student Will Watson Summer 2011

**Bioinformatics Masters Students (Two years research projects for students of the USF bioinformatics program)**

Matthew Soto

Anjali Tyagi

Leo Shah

Robert Burns

Puru Karnam

Nupur Patnaik

Marrion Riggs

Dominic Tollis

Jennifer Ferres

**Past Research support**

Core Director, National Cancer Institute, 2P30CA076292, Moffitt Cancer Center Support Grant,

PI: William Dalton, Total Direct Costs \$2,730,001/yr 2/1/2001- 8/1/2012

My role is to direct the function and scientific direction of the Microarray Core laboratory.

Support is for 25% of my salary

Co-investigator, Dept of Defense DAMD 17-02-2-0051, National Functional Genomics Center Grant,

PI W. J. Pledger, Total direct Costs \$10,000,000/yr 9/01/2003 – 8/01/2012

The goal of this project is to set up a functional genomics center for processing clinical cancer specimens from the Moffitt Cancer Center and affiliated clinics to allow a molecular analysis of each sample. My initial role was to direct efforts to streamline the information flow and storage of clinically related data as well as the microarray data generated for clinical specimens. My current role is to evaluate microarray data to develop signatures of cancer samples that provide clinically useful information.

Co-investigator, Dept of Defense, DAMD W81XWH-08-2-0101  
National Functional Genomics Center Sub-Grant, 9/01/2009 – 8/31/2011  
Role: Co-investigator To develop a classifier for predicting TGFbeta response in Lung Cancer.

Co-investigator, National Cancer Institute, 5P50 CA119997, Spore in Lung Cancer.  
Principle Investigator, Eric Haura, \$10,000,000 total dollars, 9/15/2008-8/31/2013.  
Investigator on two projects within this SPORE. Project 1 Identify molecular probes that can be used to identify and track lung cancers for intraoperative guidance.  
Project 2 Develop gene expression signatures for the measure of NF-kB activity in tumors and the assessment of the efficacy of NF-kB targeted drugs.

Co-investigator, National Cancer Institute, R01 CA149429-01, The Mitochondrial Genome and Ovarian Cancer Risk. Principle Investigator, Cathy Phelan, \$543,478 04/01/2010-03/31/2012  
Role: investigate genetic variation and plasticity in the mitochondrial genome. Look for differences between normal individuals and patient with ovarian cancer.

Co-Investigator, National Cancer Institute, Cancer Bioinformatics Grid Adopting Institution Task Orders, Principle Investigator, David Fenstermacher. Title: Adoption of CaArray. 3/01/2008-2/28/10  
Role: Testing of the database with Moffitt microarray data and the TCC warehouse.

Co-Investigator, Co-funded by National Cancer Institute and National Institute of General Medical Sciences (NIGMS), Minority Biomedical Research Support (MBRS) Program, S06 GM008239  
The role of DNA repair capacity in the prediction of risk for breast cancer.  
Principle Investigator, Matta, Jaime L. 5/01/2006-4/30/2009  
My role in this investigation is to oversee processing and analysis of microarray samples and to find correlations between the expression of DNA repair genes in tumors with the predicted risk identified by the measure of the DNA repair capacity in lymphocytes.

Principle Investigator, National Cancer Institute, Cancer Bioinformatics Grid project to develop Cancer Molecular pages, caBIG task order 3:ICR, PI Steven Enkemann, Total direct costs \$55,000/yr  
3/01/2005-2/28/2007

The goal of this project is to set up a central resource site for information pertaining to the structure, function, activity, and regulation of proteins involved in the progression of Cancer. This is a bioinformatics project that is being developed in conjunction with the Burnham Institute in California.

Co-investigator, American Heart Association, 0455183B, Left/Right differences in the heart.  
Principle Investigator, Robert Boucek, 06/01/2004-05/30/2009  
The goal of this project is to identify gene expression differences between the left ventricle and right ventricle of the heart under normal conditions and following ischemia. My role is to provide the microarray data analysis leading to candidate genes for differences in the response to ischemia and to provide guidance on mechanisms for testing or manipulating gene expression in the *in vivo* setting.

## **Patents:**

Melanoma gene signature.  
Patent No. 7,615,349 issued on November 10, 2009

Genotypic Tumor Progression Classifier and Predictor.  
Patent No. 9,037,416 issued May 19, 2015

Gene signature for the prediction of NF-kappaB activity  
Patent No. 9,115,388 issued August 25, 2015

Molecular Imaging of Cancer Cells In Vivo,  
Patent No. 20130129619 issued May 23, 2013

### **Publications:**

Allison S. Cohen, Farah K. Khalil, Eric A. Welsh, Matthew B. Schabath, **Steven A. Enkemann**, Noel D. Clark, Andrea Davis, Jun-Min Zhou, Jongphil Kim, David C. Boulware, Dung-Tsa Chen, Eric B. Haura, and David L. Morse Cell-Surface Marker Discovery for Lung Cancer. *Oncotarget*. 2017, Vol. 8, (No. 69), 113373-113402

Sewda K, Coppola D, **Enkemann S**, Yue B, Kim J, Lopez AS, Wojtkowiak JW, Stark VE, Morse B, Shibata D, Vignesh S, Morse DL. Cell-surface markers for colon adenoma and adenocarcinoma. *Oncotarget*. 2016 Apr 5;7(14):17773-89. PMID: 26894861

Cohen AS, Patek R, Enkemann SA, Johnson JO, Chen T, Toloza E, Vagner J, Morse DL. Delta-Opioid Receptor ( $\delta$ OR) Targeted Near-Infrared Fluorescent Agent for Imaging of Lung Cancer: Synthesis and Evaluation In Vitro and In Vivo. *Bioconjug Chem*. 2016 Feb 17;27(2):427-38. Epub 2015 Oct 30. PMID: 26488422

Pidala J, Bloom GC, Eschrich S, Sarwal M, **Enkemann S**, Betts BC, Beato F, Yoder S, Anasetti C. Tolerance associated gene expression following allogeneic hematopoietic cell transplantation. *PLoS One*. 2015 Mar 16;10(3):e0117001. PMID: 25774806

Tafreshi NK, Silva A, Estrella VC, McCardle TW, Chen T, Jeune-Smith Y, Lloyd MC, **Enkemann SA**, Smalley KS, Sondak VK, Vagner J, Morse DL. In vivo and in silico pharmacokinetics and biodistribution of a melanocortin receptor 1 targeted agent in preclinical models of melanoma. *Mol Pharm*. 2013 PMID: 23763620

Hopewell EL, Zhao W, Fulp WJ, Bronk CC, Lopez AS, Massengill M, Antonia S, Celis E, Haura EB, **Enkemann SA**, Chen DT, Beg AA. Lung tumor NF- $\kappa$ B signaling promotes T cell-mediated immune surveillance. *J Clin Invest*. 2013 May 1. PMID: 23635779

Dobrinski KP, **Enkemann SA**, Yoder SJ, Haller E, Scott KM. Transcriptional Response of the Sulfur Chemolithoautotroph *Thiomicrospira crunogena* to Dissolved Inorganic Carbon Limitation. *J Bacteriol*. 2012 Apr;194(8):2074-81. PMID: 22328671

Tafreshi NK, Bui MM, Bishop K, Lloyd MC, **Enkemann SA**, Lopez AS, Abrahams D, Carter BW, Vagner J, Grobmyer SR, Gillies RJ, Morse DL. Noninvasive detection of breast cancer lymph node metastasis using carbonic anhydrases IX and XII targeted imaging probes. *Clin Cancer Res*. 2012 Jan 1;18(1):207-19. PMID: 22016510

Kao WH, Riker AI, Kushwaha DS, Ng K, **Enkemann SA**, Jove R, Buettner R, Zinn PO, Sánchez NP, Villa JL, D'Andrea AD, Sánchez JL, Kennedy RD, Chen CC, Matta JL. Upregulation of Fanconi Anemia DNA Repair Genes in Melanoma Compared with Non-Melanoma Skin Cancer. *J Invest Dermatol*. 2011 Jun 23. [Epub ahead of print]. PMID: 21697891

Tafreshi NK, **Enkemann SA**, Bui MM, Lloyd MC, Abrahams D, Huynh AS, Kim J, Grobmyer SR, Carter WB, Vagner J, Gillies RJ, Morse DL. A Mammaglobin-A Targeting Agent for Non-invasive Detection of Breast Cancer Metastasis in Lymph Nodes. *Cancer Res*. 2011 Feb 1;71(3):1050-9 PMID: 21169406

Liu N, **Enkemann SA**, Liang P, Hersmus R, Zanazzi C, Huang J, Wu C, Chen Z, Looijenga LH, Keefe DL, Liu L. (2010) Genome-wide Gene Expression Profiling Reveals Aberrant MAPK and Wnt Signaling Pathways Associated with Early Parthenogenesis. *J Mol Cell Biol.* 2010 Dec; 2(6):333-44. PMID: 20926514

Morse DL, Balagurunathan Y, Hostetter G, Trissal M, Tafreshi NK, Burke N, Lloyd M, **Enkemann S**, Coppola D, Hruby V, Gillies RJ, Han H. (2010) Identification of novel pancreatic adenocarcinoma cell-surface targets by gene expression profiling and tissue microarray. *Biochem Pharmacol.* 2010 Sep 1;80(5):748-54. PMID: 20510208

**Enkemann SA.** (2010) Standards affecting the consistency of gene expression arrays in clinical applications. *Cancer Epidemiol Biomarkers Prev.* 2010 Apr;19(4):1000-3. PMID: 20332273

Gopalappa, C., Das, T. K., **Enkemann, S.** and Eschrich, S. (2009) Removal of Hybridization and Scanning Noise from Microarrays. *IEEE Transactions on NanoBioscience.* Sept, 8: 210-218. PMID: 20051337

Pidala J, Bloom GC, **Enkemann S**, Eschrich S, Lancaster J, Anasetti C. (2009) Biomarkers to discern transplantation tolerance after allogeneic hematopoietic cell transplantation. *Biol Blood Marrow Transplant.* 2010 Jun;16(6):729-38.. PMID: 19922809

Shedden K, Taylor JMG, **Enkemann SA**, Tsao MS, Yeatman TJ, Eschrich S, Jurisica I, Gerald WL, Venkatraman ES, Meyerson M, Kuick R, Dobbin KK, Lively T, Giordano TJ, Misek DE, Chang AC, Zhu CQ, Strumpf D, Hanash S, Shepherd F, Ding K, Seymour L, Naoki K, Pennell N, Weir B, Verhaak R, Ladd-Acosta C, Golub T, Gruidl M, Szoke J, Zakowski M, Rusch V, M Kris, Viale A, Motoi N, Travis W, Sharma A., Jacobson JW, Beer DG. Gene Expression-Based Survival Prediction in Lung Adenocarcinoma: A Multi-Site, Blinded Validation Study (2008) *Nature Medicine* Aug;14(8):822-7. PMID: 18641660

Ren S, Liu S, Howell P Jr, Xi Y, **Enkemann SA**, Ju J, Riker AI, (2008) The Impact of Genomics in Understanding Human Melanoma Progression and Metastasis. *Cancer Control.* Jul;15(3):202-15. PMID: 18596672.

McCarthy S, Caporali A, **Enkemann S**, Scaltriti M, Eschrich S, Davalli P, Corti A, Lee A, Sung J, Yeatman TJ, Bettuzzi S. (2008) Green tea catechins suppress the DNA synthesis marker MCM7 in the TRAMP model of prostate cancer. *Mol Oncol.* 2007 Sep;1(2):196-204. PMID: 18521193

Riker AI, **Enkemann SA**, Fodstad O, Liu S, Ren S, Morris C, Xi Y, Howell P, Metge B, Samant RS, Shevde LA, Li W, Eschrich S, Daud A, Ju J, Matta J. (2008) The gene expression profiles of primary and metastatic melanoma yields a transition point of tumor progression and metastasis. *BMC Med Genomics.* Apr 28;1(1):13 PMID: 18442402

Buettner R, Huang M, Gritsko T, Karras J, **Enkemann S**, Mesa T, Nam S, Yu H, Jove R. (2007) Activated signal transducers and activators of transcription 3 signaling induces CD46 expression and protects human cancer cells from complement-dependent cytotoxicity. *Mol Cancer Res.* Aug;5(8):823-32. PMID: 17699108

Joo, Y., Casella G., Booth J., Lee K., and **Enkemann S.**, (2007). Normalization of Dye Bias in Microarray Data Using the Mixture of Splines Model. *Statistical Applications in Genetics and Molecular Biology.* Vol. 6 : Iss. 1, Article 2 PMID: 17402917



Jensen EH, Lewis JM, McLoughlin JM, Alvarado MD, Daud A, Messina J, **Enkemann S**, Yeatman TJ, Sondak VK, Riker AI. (2007) Down-Regulation of Pro-Apoptotic Genes is an Early Event in the Progression of Malignant Melanoma. *Ann Surg Oncol.* Apr;14(4):1416-23. PMID: 17195911

Zhang L, Yoder SJ, **Enkemann SA**. (2006) Identical probes on different high-density oligonucleotide microarrays can produce different measurements of gene expression. *BMC Genomics.* Jun 15;7:153. PMID: 16776839

Gritsko T, Williams A, Turkson J, Kaneko S, Bowman T, Huang M, Nam S, Eweis I, Diaz N, Sullivan D, Yoder S, **Enkemann S**, Eschrich S, Lee JH, Beam CA, Cheng J, Minton S, Muro-Cacho CA, Jove R. (2006) Persistent activation of stat3 signaling induces survivin gene expression and confers resistance to apoptosis in human breast cancer cells. *Clin Cancer Res.* Jan 1;12(1):11-9. PMID: 16397018

Buzzeo R, **Enkemann S**, Nimmanapalli R, Alsina M, Lichtenheld MG, Dalton WS, Beaupre DM. (2005) Characterization of a R115777-resistant human multiple myeloma cell line with cross-resistance to PS-341. *Clin Cancer Res.* 11(16):6057-64. PMID: 16115951

Zhang X., Li P., Bao J., Nicosia S.V., Wang H., **Enkemann S.A.**, Bai W. (2005) Suppression of death receptor-mediated apoptosis by 1,25-dihydroxyvitamin D3 revealed by microarray analysis. *J Biol Chem.* 280(42):35458-68. PMID: 16093247

Kamath SG, Chen N, **Enkemann SA**, Sanchez-Ramos J. (2005) Transcriptional profile of NeuroD expression in a human fetal astroglial cell line. *Gene Expr.* 12(2):123-36. PMID: 15892453

Helm, J., **Enkemann, S.A.**, Coppola, D., Barthel, J.S., Kelley, S.T., Yeatman, T.J. (2005) Dedifferentiation precedes invasion in the progression from Barrett's metaplasia to esophageal adenocarcinoma. *Clin Cancer Res.* 2005 11:2478-85. PMID: 15814623

Dauer, D.J., Ferraro, B., Song, L., Buettner, R., **Enkemann, S.**, Jove, R., and Haura, E.B. (2005) Stat3 regulates genes common to both wound healing and cancer. *Oncogene* 24(21):3397-408. PMID: 15735721

Harbig J, Sprinkle R, and **Enkemann SA**. (2005) A sequence-based identification of the genes detected by probesets on the Affymetrix U133 plus 2.0 array. *Nucleic Acids Res.* 33(3):e31. PMID: 15722477

Dobbin, K.K., Beer, D.G., Meyerson, M., Yeatman, T.J., Gerald, W.L., Jacobson J. W., Conley B., Buetow, K.H., Heiskanen, M., Simon, R.M., Minna J.D., Girard, L., Misek D.E., Taylor, J.M.G., Hanash, S., Naoki, K., Hayes, D.N., Ladd-Acosta, C., **Enkemann S. A.**, Viale, A., and Giordano, T.J. (2005) Inter-laboratory comparability study of gene expression analysis using oligonucleotide microarrays. *Clinical Cancer Research* 11:565-72. PMID: 15701842

Centeno, B.A., **Enkemann, S.A.**, Coppola, D., Huntsman, S., Bloom, G., Yeatman, T.J. Classification Of Human Tumors Using Gene Expression Profiles Obtained On Microarray Analysis Of Fine Needle Aspiration Samples. *Cancer Cytopathology* 105(2):101-9. PMID: 15643601

Sung, J., Turner, J, McCarthy, S., **Enkemann, S**, Li, C.G., Yan, P, Huang, T., Yeatman, T.J. (2005) Oncogene regulation of tumor suppressor genes in tumorigenesis. *Carcinogenesis* 26:487-94. PMID: 15498783

Bloomston M., Durkin A., Yang I., Rojiani M., Rosemurgy A.S., **Enkmann S.**, Yeatman T.J., Zervos E.E. (2004) Identification of molecular markers specific for pancreatic neuroendocrine tumors by genetic profiling of core biopsies. *Ann Surg Oncol.* 11(4):413-9. PMID: 15070602

Hazelhurst, L.A., **Enkemann, S.A.**, Beam, C.A., Argilagos, R.F., Painter, J., Shain, K.H., Saporta, S., Boulware, D., Moscinski, L., Alsina, M., and Dalton, W.S. (2003) Genotypic and phenotypic comparisons of *de-novo* and acquired melphalan resistance in an isogenic multiple myeloma cell line model. Cancer Research 63(22):7900-6. PMID: 14633719

Tsibris, J.C.M., Maas, S., Segars, J.H., Nicosia, S.V. **Enkemann, S.A.**, O'Brien, W.F., and Spellacy W.N. (2003) New potential regulators of uterine leiomyomata from DNA arrays: The ionotropic glutamate receptor GluR2. Biochem Biophys Res Commun. 312(1):249-54. PMID: 14630051

Tsibris JC, Segars J, **Enkemann S**, Coppola D, Wilbanks GD, O'Brien WF, Spellacy WN. (2003) Fertil Steril. Aug;80(2):279-81. PMID: 12909486

Zhang,X., Ma, L., **Enkemann, S.A.**, and Pledger, W. J.(2003) Role of GADD45 $\alpha$  in the density-dependent G1 arrest induced by p21Kip1. Oncogene 2003 Jul 3;22(27):4166-74. PMID: 12833139

**Enkemann, S.A.**, Ward, R.D., Berger, S.L.. (2000) Mobility within the nucleus and neighboring cytosol is a key feature of prothymosin-alpha. J. Histochem Cytochem. 48(10):1341-55.

**Enkemann, S.A.**, Wang R.H., Trumbore, M.W., and Berger, S.L. (2000) Functional discontinuities in prothymosin alpha caused by caspase cleavage in apoptotic cells. Journal of Cellular Physiology 182(2):256-68. PMID: 10623890

**Enkemann, S.A.**, Pavur, K.S., Ryazanov, A.G., and Berger, S.L. (1999) Does Prothymosin  $\alpha$  Affect the Phosphorylation of Elongation Factor 2? Journal of Biological Chemistry 274(26):18644-50. PMID: 10373476

Tao, L., Wang, R.H., **Enkemann, S. A.**, Trumbore, M.W., Berger, S.L. (1999) Metabolic Regulation of Protein-bound Glutamyl Phosphates: Insights into the Function of Prothymosin alpha. Journal of Cellular Physiology 178:154-163. PMID: 10048579

Trumbore, M.W., Wang R.H., **Enkemann, S.A.**, Berger, S.L. (1997) Prothymosin  $\alpha$  Contains Phosphorylated Glutamic Acid Residues. Journal of Biological Chemistry 272:26394-26404. PMID: 9334214

**Enkemann, S.A.**, Konieczny, S.F., and Taparowsky, E.J. (1990) Adenovirus 5 E1A Represses Muscle-specific Enhancers and Inhibits Expression of the Myogenic Regulatory Factor Genes, *MyoD1* and *Myogenin*. Cell Growth and Differentiation. 1: 375-382. PMID: 2177635

## Book Chapters

Sean J. Yoder and Steven A. **Enkemann**. ChIP-on-Chip Analysis Methods for Affymetrix Tiling Arrays. Srikumar P. Chellappan (ed.), Chromatin Protocols: Second Edition, vol 523. 2009. Humana Press. PMID: 19381926

Steven A. **Enkemann**, James L. McLoughlin, Eric H. Jensen, and Timothy J. Yeatman Whole-Genome Analysis of Cancer. Gavin J. Gordon (ed.), Bioinformatics in Cancer and Cancer Therapy. 2009. Humana Press.

## Unpublished Manuscripts:

**Enkemann, S.A.**, Marek, E., McGuinness, M., and Lesnaw, J.A. Functional integrity and states of Phosphorylation of recombinant L and P subunits of the multifunctional transcriptase of VSV expressed in insect cells.

**Enkemann, S.A.** and Lesnaw, J. A. Cloning and sequence of the L and P gene from the Vesicular Stomatitis virus: Missouri strain.

**Enkemann, S.A.** and Lesnaw, J. A. Sequence Comparison of the L genes from the wild-type Missouri isolate of VSV, a temperature sensitive mutant, and a spontaneous revertant of the ts phenotype.

### **Published Abstracts and other presentations:**

Allison S. Cohen, Yolaine Jeune-Smith, Aimee Bode, Farah K. Khalil, Eric A. Welsh, **Steven A. Enkemann**, Noel Clark, Renata Patek, Eric B. Haura, Josef Vagner, and David L. Morse, Molecular Imaging of Lung Cancer using a Fluorescent delta-Opioid Receptor Targeted Probe: Pharmacokinetics, Biodistribution, and Intraoperative Guidance. Abstract # SS 45, Presented at the World Molecular Imaging Congress 2013 meeting. Savannah, Georgia

Dale Han, Gregory Bloom, Marilyn M Bui, **Steven Enkemann**, Hideko Yamauchi, Gang Han, Anthony P Conley, Jonathan S Zager, David H Cheong, Damon R Reed, Robert S Lavey, Vernon K Sondak, G Douglas Letson, Ricardo J Gonzalez Differential Gene Expression in Liposarcoma: A Biologic Basis for Clinically Aggressive Behavior? Abstract SF2012-22640 Presented at the 100<sup>th</sup> Annual meeting of The American College of Surgeons 2012 Clinical Congress. Chicago, IL . Oct, 2012

Dale Han, Gregory C Bloom, Marilyn M Bui, **Steven Enkemann**, Hideko Yamauchi, Gang Han, Anthony Paul Conley, Jonathan S. Zager, David Cheong, Damon R. Reed, Robert S Lavey, Vernon K. Sondak, Douglas D Letson, Ricardo Jorge Gonzalez Abstract 10048 Presented at annual meeting of the American Society of Clinical Society. Differential gene expression in liposarcoma: insight into pathways for dedifferentiation? Chicago, IL . June, 2012

Kamini Sewda, Jonathan W Wojtkowiak, **Steven Enkemann**, Alexis S Lopez, Domenico Coppola, David Shibata, Timothy J Yeatman, Robert J Gillies, David L Morse Cell-surface marker discovery for colorectal cancer .Abstract #1156, Presented at the 103<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Chicago, IL . Mar 31, 2012

Edna R. Gordian, Steven A. Eschrich, **Steven A. Enkemann**, Eric, Haura, and Teresita Antonia-Munoz TGF $\beta$  response signature in NSCLC. Abstract #7470, Presented at the 103<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Chicago, IL . Mar 31, 2012

Ernest Amankwah, Hui-Yi Lin, Thomas Sellers, Hyun Park, Selina Radlein, Julio Pow-Sang, Ardeshir Hakam, Ya-Yu Tsai, Maria Rincon, Seungjoon Kim, Chaomei Zhang, **Steven Enkemann** and Jong Y. Park. Genetic Variations in Angiogenesis-Related Genes in Prostate Cancer recurrence. Abstract #6755, Presented at the 103<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Chicago, IL . Mar 31, 2012

Kamini Sewda, **Steven Enkemann**, Domenico Coppola, Timothy J Yeatman, Robert J. Gillies, and David L. Morse (2011) Identification of markers for colon adenoma and adenocarcinoma. Abstract # Presented at the 102<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Orlando, FL . April 5, 2011

**Steven Enkemann** (2010) Clusters of amplified gene expression in tumors provide clues to the cellular origin, oncogene dependence, and treatment options for individual tumors. Abstract # 14 Presented at the National Functional Genomics Center Annual Meeting. Clearwater, FL. Oct 28, 2010.

Nia Jackson and **Steven Enkemann** (2010) Classification of tumors based solely on gene expression profiles yields slightly different tumor groups than currently recognized in existing classification systems. Abstract # 14 Presented at the National Functional Genomics Center Annual Meeting. Clearwater, FL. Oct 28, 2010.

Nia Jackson and **Steven Enkemann** (2010) Progress on a Universal Classifier. Abstract #A57 Presented at the AACR meeting on Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved. Miami, FL. Sept 30, 2010.

Bridget Riggs, Mujiba Ansari, Abby Koch, Sean Yoder, **Steven Enkemann**, Erin M. Siegel (2009) Systematic evaluation of RNA quality and cDNA conversion of partially degraded RNA from exfoliated cervical cells collected in PreservCyt media for routine clinical evaluation. Abstract Number: 3030 Presented at the 100<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Denver, CO. April 20, 2009

Svetlana G. Marinskaya, Deepali Shah, Sean J. Yoder, Steven A. Eschrich, **Steven A. Enkemann** (2009) Detection of RNA integrity directly from microarray data and the effect of degradation on the accuracy of molecular signatures. Abstract 2431, Presented at the 100<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. Denver, CO. April 20, 2009

Yuan Ren, Liwei Chen, Shen-Shu Sung, **Steven Enkemann**, Eric Haura, and Jie Wu (2009) Requirement of Shp2 in Proliferating and Transforming Activities of Lung Cancer Cells  
H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL 33612, 2009 scientific retreat

Revika Matuknauth, Gabriela Wright, Haikou Bian, **Steve Enkemann**, Bernadette Sosa, Pedro Santiago and Doug Cress (2009) The RB Tumor Suppressor Regulates Expression of the Ret Oncogene. H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL 33612, 2009 scientific retreat

**Enkemann S.A.** (2008) Quantitative Validation of Gene Expression Data: What are you Validating and Why? Presented at the Cambridge Healthtech Institute's meeting on "Quantitative PCR" San Diego, California, Apr 19-23.

Nasir, A., Agrawal, D., McCarthy, S. M., Chen, D-T., Bloom, G., Eschrich, S., Nasir, N.T., Gardner, N.M., Strosberg, J.R., **Enkemann, S.**, Coppola, D., Malafa, M., Yeatman, T., Kvolts, L.K. (2008) Discovery and validation of a novel set of putative progression markers in sporadic well-differentiated primary pancreatic endocrine carcinomas. Abstract 1944 Presented at the 99<sup>th</sup> Annual meeting of the American Association of Cancer Researchers. San Diego, California, April 14<sup>th</sup>.

**Enkemann S.A.** (2007) Pitfalls in Microarray Analysis That Contribute to the Need For Validation. Presented at the Cambridge Healthtech Institute's meeting on "Quantitative PCR, Microarrays, and Biological Validation." Providence, Rhode Island, Oct 16-17.

Wynn Kao, Adam Riker, Steve **Enkemann**, Richard Jove, Ralph Buettner, Nestor Sanchez, Jaime Villa, Jorge Sanchez, Jaime Matta. (2007) Upregulation of Fanconi Anemia DNA repair pathway in malignant melanoma. Abstract 5817, AACR 98<sup>th</sup> Annual Meeting, Los Angeles, CA, April 14-18, 2007

Riker AI, Fodstad O, Ju J, Sondak VK, Messina J, Puleo C, **Enkemann S**, Daud A, Buettner R, Matta J: (2006) A gene specific model for tumor progression and metastatic potential correlates with melanoma tumor thickness. Perspectives in Melanoma X, Society for Melanoma Research (combined meeting), Amsterdam, The Netherlands, September 14th-16<sup>th</sup>.  
2006

Riker AI, Fodstad O, Ju J, Sondak VK, Messina J, Puleo C, **Enkemann S**, Daud A, Buettner R, Matta J: (2006) Comparative whole gene expression profiling yields a transition point for melanoma tumor progression. Perspectives in Melanoma X, Society for Melanoma Research (combined meeting), Amsterdam, The Netherlands, September 14th-16<sup>th</sup>.

**Enkemann, S.** Yoder, S.J., and Eschrich, S. (2006) Putting more biology into microarray analysis. Presented at the 9<sup>th</sup> annual meeting of the Microarray Gene Expression Data Society. University of Washington, Seattle, Washington, Sept 7-9.

Jensen, E.H., Lewis, J.M., Alvarado, M.D., McLoughlin, J.M., **Enkemann, S.**, Messina, J., Daud, A., Sondak, V.K., Yeatman, T.J., Riker, A.I. (2006) Downregulation of pro-apoptotic genes is an early event in the progression of Malignant Melanoma.. Presented at the Society of Surgical Oncology 59<sup>th</sup> Annual Cancer Symposium, March 23-26, San Diego, CA.

Riker, A.I., Jensen, E.H., Lewis, J.M., Alvarado, M., Puleo, C.A., Messina, J., Sondak, V.K., Daud, A., **Enkemann, S.**, Yeatman, T.J. (2006) Comparative genetic interrogation of a primary melanoma and synchronous lymph node metastasis from a single patient. Presented at the Society of Surgical Oncology 59<sup>th</sup> Annual Cancer Symposium, March 23-26, San Diego, CA.

Moulder, S.L., **Enkemann, S.**, Dupont, E., Riker, A., Furman, B., Carter, WB., Hoover, S., Cox, C., Eschrich, S.A., Yeatman, T., Diaz, N. (2005) The Use of DNA Microarray to Determine Potential Pathways of Tumor Cell Metastasis. Poster 4069, presented at the 29<sup>th</sup> Annual San Antonio Breast Cancer Symposium, Dec 14-17, San Antonio, Texas.

Buzzeo, R., **Enkemann, S.** Alsina, M., Nimminipali, R., Lichtenheld, M.G., Dalton, W.S. and Beaupre, D.M. (2005) Characterization of a R11577 resistant human multiple myeloma cell line with cross-resistance to PS341. Abstract 3363 Proceedings of the American Association of Cancer Researchers, 96<sup>th</sup> annual meeting. Anaheim, California

Dauer, D., Ferraro, B., Song, L., Yu, B., Mora, L., Buettner, R., **Enkemann, S.**, Jove, R., and Haura, E. (2005) Regulation of genes common to wound healing and cancer by Stat3. Abstract Proceedings of the American Association of Cancer Researchers, 96<sup>th</sup> annual meeting. Anaheim, California

Buettner, R., Huang, M., **Enkemann, S.**, Mesa, T., Yu, H. and Jove, R. (2005) Activated Stat3 induces CD46 expression and protects human cancer cells from complement-dependent cytotoxicity. Abstract 2439 Proceedings of the American Association of Cancer Researchers, 96<sup>th</sup> annual meeting. Anaheim, California

**Enkemann, S. A.**, Pledger, W.J., and Mohapatra, S. (2005) Identification of targets of purine analogues in human tumor cells by microarray analysis. Abstract 7538 Proceedings of the American Association of Cancer Researchers, 96<sup>th</sup> annual meeting. Anaheim, California

Nimmanapalli, R., Hazelhurst, L.A., **Enkemann, S.**, Alsina, M., and Dalton, W. (2004) Bortezomib induced reversal of CAMDR phenotype in myeloma is associated with AKT and ERK1/2 signaling. The American Society of Hematology 46th Annual Meeting and Exposition. San Diego, California. BLOOD Vol 104;numb 11; part 1, page3357 (poster# 627-III)

Buzzeo, R., **Enkemann, S.** Alsina, M., Nimmanapalli, R., Lichtenheld, M.G., Dalton, W.S., and Beaupre, D.M. (2004) Characterization of a R115777 Resistant Human Multiple Myeloma Cell Line with Cross-resistance to PS-341. The American Society of Hematology 46th Annual Meeting and Exposition. San Diego, California. BLOOD Vol 104;numb 11; part 1, page3363 (poster# 633-III)

Eschrich, S., Bloom, G.C., and **Enkemann, S.** (2004) MMD: A Minimal Microarray Database using a Hierarchically-Organized Web-Based File System. Seminar presented at the Advancing practice, instruction and innovation through informatics meeting. University of Pittsburgh. Pittsburgh, Pennsylvania.

Harbig J, Sprinkle R, and **Enkemann SA.** (2004) Sequence-based Identification of the Genes Detected by Probes on the U133A GeneChip Results in an Updated Annotation of More than 6000 Probesets. Poster at Cambridge Healthtech Institute Microarray Data Analysis. Washington D.C.

Buettner, R., Huang, M., Eschrich, S., Bloom, G., Sprinkle, B., **Enkemann, S.**, Lee, A., Yu, H., Jove, R. (2004) Novel Stat3 regulated genes in prostate cancer identified by microarray analysis. Seminar Proceedings of the American Association of Cancer Researchers, 95<sup>th</sup> annual meeting. Orlando, Florida

**Enkemann, S.A.**, Trumbore, M.W., and Berger S.L.(1997) Nucleoplasmin, the embryonic histone chaperone from *Xenopus laevis*, contains high energy glutamyl phosphates in eggs and cytoplasmic egg extracts. Poster presented at the Symposium on the Eukaryotic Nucleus. Arlie, Virginia

Trumbore, M.W., Wang, R.H., **Enkemann, S.A.** and Berger S.L. (1997) The discovery and characterization of glutamyl phosphate in the nuclear protein prothymosin  $\alpha$ . Poster presented at the NIH research festival. Bethesda, Maryland

**Enkemann, S.A.** (1994) Disruption of ancestral polymerase motifs in the L protein of the Vesicular Stomatitis Virus impairs catalysis but not substrate recognition. Invited seminar presented to the gene therapy special interest group at the University of Cincinnati, Cincinnati, Ohio

**Enkemann, S.A.**, Marek, E. McGuinness, M. and Lesnaw, J.A. (1994) Analysis of L gene mutations using reconstituted transcription complexes of VSV. Poster presented at the 13<sup>th</sup> annual meeting of the American Society for Virology. Madison. Wisconsin.

**Enkemann, S.A.** (1994) Using a DNA virus to study an RNA virus. Invited seminar presented to the Molecular Virology special interest group at the University of Kentucky. Lexington, Kentucky

**Enkemann, S.A.** (1990) A viral transcription factor that down-regulates muscle-specific gene expression. Invited seminar presented at Stockton State College of New Jersey. Pomona, New Jersey.

**Enkemann, S.A.**, Konieczny, S.F., and Taparowsky, E.J. (1989) Expression of the Adenovirus E1A gene product represses muscle-specific gene expression and inhibits differentiation. Poster presented at the Fifth Annual Meeting on Oncogenes. Hood College, Frederick, Maryland.