Chang K. Sung, PhD

Assistant Professor
Department of Biological and Health Sciences
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MOLECULAR CANCER CELL BIOLOGIST

Significant experience in protein destruction- and small RNA-mediated pathological signaling pathways

- Taught various biology courses and improved educational materials
- Guided and supervised junior researchers and students to develop research projects
- Discovered protein destruction mechanisms of a tumor suppressor that could lead to development of novel therapeutic approaches in human ovarian carcinomas
- Performed Q RT PCR-based RNA arrays and identified microRNAs that could be used as biomarkers for early detection of human cancers and tumor progression

TEACHING EXPERIENCE

Texas A&M University-Kingsville Kingsville, TX
Assistant Professor

Genetics Lecture and Recitation Fall 2013

University of Illinois at Chicago Chicago, IL
Teaching Assistant
-Taught laboratory and discussion sections for Lab and Lecture courses for seven academic semesters
-Developed educational materials and curricula aimed at encouraging student participation such as research article group discussions and research data/background presentations

Cell Biology Lab Fall 2003
Genetics Lab Fall 2002, Fall 2000, Spring 2000
Genetics Lecture Fall 2001, Spring 2001
General Biology Lab Fall 1999

RESEARCH EXPERIENCE

Texas A&M University-Kingsville 2013-Present
ASSISTANT PROFESSOR in Biology Kingsville, TX

- Research interests include tumorigenesis and programmed cell death mechanisms utilizing the mouse polyoma virus experimental system. Current studies also focus on functional roles of the p150 protein, a tumor suppressor in normal human ovarian surface epithelial cells

Harvard Medical School 2011-2013
INSTRUCTOR in Microbiology and Immunobiology Boston, MA

- Investigated tumorigenesis and programmed cell death mechanisms with various cell based assays including protein-protein interaction studies, Q RT PCR arrays and pyrosequencing analyses.

  -Screened de-ubiquitinating enzymes (DUBs) that may preserve a tumor suppressor p150 in normal human ovarian surface epithelial cells

-Examined epigenetic silencing (promoter methylation) of the tumor suppressor p150 in human ovarian carcinomas
-Screened murine microRNAs in response to the oncogenic polyoma virus infection to identify novel biomolecular markers involved in oncogenesis and tumor progression
-Investigated how polymorphisms in toll-like receptor 4 (Tlr4) lead to different cytokine responses

Harvard Medical School 2004-2011
RESEARCH FELLOW in Pathology; Advisor: Thomas L. Benjamin Boston, MA

- Studied regulation of cellular proteins during the mouse polyoma virus infection using gene reporter/TUNEL assays, immunofluorescence analysis of tissues, chromatin immunoprecipitation and *in vitro*/*vivo* ubiquitination assays.

-Characterized ubiquitin-mediated regulation of a tumor suppressor p150
-Determined that the levels of TAZ and its kinase Nek1 are critical for polycystic kidney disease (PKD)
-Identified and characterized a set of microRNAs encoded by the oncogenic polyoma virus
-Analyzed the mechanisms of bone tumor metastasis during the mouse polyoma virus infection

University of Illinois 1999-2004
GRADUATE RESEARCHER; Advisor: Donald A. Morrison Chicago, IL

- Developed new pneumococcal mutagenesis methods, which have since been applied to many transformable streptococcal strains
- Identified new genes in response to the competence pheromone by DNA microarrays

Illinois Institute of Technology 1997-1999
GRADUATE RESEARCHER; Advisor: Mark D. Garfinkel Chicago, IL

- Evaluated the DNA-binding properties of the OVO zinc finger motifs in *Drosophila melanogaster*

EDUCATION

PhD, Molecular Biology/Biological Sciences 2004
University of Illinois Chicago, IL, USA
Advisor: Donald A. Morrison, Ph.D.
Thesis: *GENOMIC ANALYSIS IN PNEUMOCOCCUS: COMW AS A NEW REGULATOR OF THE COMPETENCE-SPECIFIC SIGMA FACTOR, COMX*

MS, Biology 1999
Illinois Institute of Technology Chicago, IL, USA
Advisor: Mark D. Garfinkel, Ph.D.
Thesis: *THE BINDING ASSAY OF SHAVENBABY GENE USING DROSOPHILA OVO PROTEIN*

BS, Applied Microbiology 1995
Yeungnam University Gyeongsan, S. KOREA

PEER-REVIEWED PUBLICATIONS

Sung, C.K., Li, D., Andrews, E., Drapkin, R. and Benjamin, T.L. (2013) Promoter Methylation of the SALL2 Tumor Suppressor Gene in Ovarian Cancers. **Mol Oncology** 7(3):419-27

Velupillai, P.*, **Sung, C.K.***, Andrews, E., Moran, J., Beier, D., Kagan, J. and Benjamin, T.L. (2012) Polymorphisms in TLR4 Underlie Susceptibility to Tumor Induction by the Mouse Polyoma Virus. **J Virol** 86(21):11541-7 *contributed equally ***Journal Spotlight Article***

Sung, C.K.*, Yim, H.*, Gu, H., Li, D., Andrews, E., Duraisamy, S., Li, C., Drapkin, R. and Benjamin, T.L. (2012) The Polyoma Virus Large T Binding Protein p150 is a Transcriptional Repressor of c-MYC. **PLoS ONE** 7(9): e46486 *contributed equally

Andrews, E.*, Velupillai, P.*, **Sung, C.K.**, Beier, D. and Benjamin, T.L. (2012) Production of a Natural Antibody to the Mouse Polyoma Virus is a Multigenic Trait. **G3: Genes, Genomes, Genetics** 2(3):353-5 *contributed equally

Sung, C.K.*, Dahl, J.*, Yim, H., Rodig, S. and Benjamin, T.L. (2011) Transcriptional and Post-translational Regulation of the Quiescence Factor and Putative Tumor Suppressor $p150^{Sal2}$. **FASEB J** 25(4):1275-83 *contributed equally

Yim, H., **Sung, C.K.***, You, J.*, Tian, Y. and Benjamin, T.L. (2011) Nek1 and TAZ Interact to Maintain Normal Levels of Polycystin2. **J Am Soc Nephrol** 22(5):832-7 *contributed equally ***Journal Highlight Article***

Gu, H., Li, D., **Sung, C.K.**, Yim, H., Troke, P.J.F. and Benjamin, T.L. (2011) DNA-binding Properties of the Transcription Factor and Putative Tumor Suppressor $p150^{Sal2}$. **Biochim Biophys Acta** Apr-Jun;1809(4-6):276-83

Velupillai, P.*, **Sung, C.K.***, Tian, Y., Dahl, J., Carroll, J., Bronson, R. and Benjamin, T.L. (2010) Polyoma Virus-Induced Osteosarcomas in Inbred Strains of Mice: Host Determinants of Metastasis. **PLoS Pathogens** 6(1): e1000733 *contributed equally

Sullivan, C.S.*, **Sung, C.K.***, Pack, C.D., Grundhoff, A., Lukacher, A.E., Benjamin, T.L. and Ganem, D. (2009) Murine Polyomavirus Encodes a MicroRNA That Cleaves Early RNA Transcripts But is Not Essential For Experimental Infection. **Virology** 387 (2009) 157-167 *co-first authors

Sung, C.K. and Morrison, D.A. (2005) Two Distinct Functions of ComW in Stabilization and Activation of the Alternative Sigma Facor ComX in *Streptococcus pneumoniae*. **J Bacteriol** 187(9): 3052-61

Peterson, S.N., **Sung, C.K.***, Cline, R., Desai, B.V.*, Snesrud, E.C., Luo, P., Walling, J., Li, H., Mintz, M., Tsegaye, G., Burr, P.C., Do, Y., Ahn, S., Gilbert, J., Fleischmann, R.D., and Morrison, D.A. (2004) Identification of Competence Pheromone Responsive Genes In *Streptococcus pneumoniae* by Use of DNA Microarrays. **Mol Microbio** 51(4): 1051-70 *contributed equally

Lau, P.C., **Sung, C.K**., Lee, J.H., Morrison, D.A., and Cvitkovitch, D.G. (2002) PCR ligation mutagenesis in transformable streptococci: application and efficiency**. J Microbiol Methods** 49: 193-205.

Sung, C.K., Li, H., Claverys, J.P., and Morrison, D.A. (2001) An *rpsL* cassette, Janus, for gene replacement through negative selection in *Streptococcus pneumoniae***. Appl Environ Microbiol** 67: 5190-5196.