Sangjun Lee, Ph.D (Permanent US Resident)

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AREA OF INTEREST

- Preclinical studies to identify and validate new therapeutic targets for human cancers.
- Translational analysis of signaling mechanisms for diagnosis and early prevention.

PROFESSIONAL PROFILE

Ph.D. scientist, more than10 year-experience in cancer research, especially for target discovery using animal model and modern technologies including bioinformatics.

RESEARCH HIGHLIGHTS

- Identification and development of novel targets and therapeutic small molecules/antibodies targeting GPCR and chemokine signaling for the treatment of pancreatic and gastric cancers.
- Preclinical validation of novel therapies using in vitro and in vivo model including orthotopic PDX murine model.
- Microarray analysis using formalin-fixed paraffin embedded (FFPE) tissues and Laser Captured Microdissection (LCM), and stage-specific gene expression profiling characterizing breast cancer evolution and tumor microenvironment.
- Multi-omic analysis of human cancers using genomic, transcriptomic, epigenetic and proteomic clinical datasets to identify oncogenes and tumor suppressor genes and molecular pathways for novel targets and strategy of synthetic lethality.
- Bioinformatic studies of cancer genetics in collaboration with clinical statisticians and computational biologists.
- Genome-wide research of human diseases especially breast and liver cancers using Next Gen Sequencing (NGS), Microarray, and CGH/CNV analysis.
- Intensive experience of clinical researches including histology and immunohistochemistry and cell-based assays.

EDUCATION

Ph.D. Cancer Biology, University of Texas-MD Anderson Cancer Center, Houston, TX 2004
M.S. Genetic Engineering, Sung Kyun Kwan University, Seoul, Korea 1995
B.S. Genetic Engineering, Sung Kyun Kwan University, Seoul, Korea 1993

SKILLS SUMMARY

1. Molecular and Cellular

•Tissue cultures (mammalian primary cell culture, 3D culture) •HTS Cell based assays
•Flow Cytometry •Lenti and Retro Viral transfection
•Next Gen Seq •Microarray •Mouse xenograft
•Transgenic mouse model •Realtime PCR •siRNA and gene knockdown
•Laser Captured Microdissection •DNA/RNA works •cDNA library construction
•Microscopy and cell imaging •Site-directed Mutagenesis and Molecular Cloning

2. Protein and Biochemical

•Immunohistochemistry •Immunocytochemistry •Immunoblotting
•Tissue microarray •Histology •Fluorescent In Situ Hybridization •ELISA (Quantitative ELISA-linked Immunohistochemistry)
•Enzyme assays •Protein blotting (SDS-PAGE and western)

3. Bioinformatics

•Analysis of Microarray •Analysis of Next Generation Sequencing
•Multi-Omic analysis of in silico database

4. Softwares

•Microarray analysis • Web based Sequencing alignment and analysis
•Pathway analysis (Ingenuity, Gene Ontology, GeneGO, Gene Indexer)
•Microsoft Office (Excel, PowerPoint, Word) •Adobe Photoshop

WORK AND RESEARCH EXPERIENCE

Staff Scientist; *Project:* Identification and development of novel targets and therapeutic chemicals or antibodies for pancreatic and gastric cancers.
Surgical Oncology in the Department of Surgery, City of Hope-Los Angeles (2014 - present)

Research Assistant Professor; *Project:* 1. Develop basal-like breast cancer model to identify and prioritize oncogenes and TSG. 2. Genomic study of liver carcinogenesis using whole genome Next Generation Sequencing to identify biomarkers and mechanisms.
W. Harry Feinstone Center for Genomic Research, University of Memphis (2013 - 2014)

Senior Scientist, Translational Breast Cancer Research; *Project*: Genetic Alterations in the Progression of Ductal Carcinoma In Situ to Invasive Breast Cancer.
Department of Pathology, Washington University School of Medicine (2009 - 2013)

Postdoctoral Research Fellow, Translational Breast Cancer Research; *Project:* Molecular Characteristics of Early Hyperplastic Precursors of Breast.
Department of Pathology, Washington University School of Medicine (2007 - 2009)

Postdoctoral Research Fellow, Translational Breast Cancer Research; *Project:* 1. Molecular Characteristics of Early Hyperplastic Precursors of Breast Cancer. 2. Apocrine Metaplasia and the Development of Estrogen Receptor Negative Breast Cancer.
Department of Pathology, Baylor Breast Center, Baylor College of Medicine (2004 - 2006)

Graduate Research Assistant, Univ. of Texas-MD Anderson Cancer Center (1997 - 2004)
Ph.D. Thesis. "Functional Studies of Ras and Bcl-2 Oncoproteins in Keratinocyte Homeostasis and Multistep Skin Carcinogenesis".

Research Associate, Molecular Biology Lab in Sung-Ae Hospital, Korea (1995 - 1996)
Research Associate, Institute of Korean rural development administration, Korea (1993 - 1995)

HISTORY OF GRANT APPLICATIONS

1. KL2 Career Development Award at Washington University School of Medicine, 2009

Title of Proposal, " Importance of cystatin A in the progression of human DCIS to IBC"
Role : Principle Investigator
Final Result : 1.4% score (Highest scorer among the applicants)

2. Susan G. Komen - Career Catalyst Research Grants, 2010

Title of Proposal, "The Importance of Cystatins and Their Molecular Targets, Cathepsins, in the Progression of Human Ductal Carcinoma In Situ(DCIS) to Invasive Breast Cancer(IBC)"
Role : Principle Investigator
Final Result : Did not get funded

3. KM1 Grant-Career Development Program in Comparative Effectiveness Research Center, Washington University School of Medicine, 2012

Title of Proposal, " Genes Associated with and Regulating the Progression of Ductal Carcinoma In Situ to Invasive Breast Cancer"
Role : Principle Investigator
Final Result : Did not get funded

4. The National Pancreas Foundation, City of Hope Medical Center, 2015

Title of Proposal, "Cross-talk Between Oncogenic KRAS and CXCR4/CXCR7 Chemokine Signaling in the Development of Pancreatic Cancer"
Role : Principle Investigator
Final Result : Under reviewing

TEACHING EXPERIENCE

1. Department of Genetic Engineering, Sung Kyun Kwan University, Seoul, Korea

- Zoology lab class (1993)
- Genetic Engineering lab class (1994)

2. University of Memphis, Memphis, TN
- Ph.D Graduate students-Mentoring (2013-2014)

PUBLICATIONS

Sangjun Lee, Choo-Mi Ahn, Oh-Byung Kwon, and Moosik Kwon. *Light-induced cDNA cloning in Chinese cabbage, Journal of National Science Sung Kyun Kwan University (Korea), 1994, 2:75-80.*

Hyun-Uk Kim, **Sangjun Lee**, Wang-Su Cho, Tae-Young Chung. *Sequencing of cDNA clones randomly chosen from an immature flower cDNA Library of Chinese cabbage: Expressed sequence tags. Journal of Agricultural Science (Korea), 1995, 37(1):167-171.*

Ozpolat B, Actor JK, Rao XM, **Sangjun Lee**, Osato M, Graham DY, Lachman LB. *Quantitation of Helicobacter pylori in the stomach using quantitative polymerase chain reaction assays. Helicobacter, 2000, 5(1):13-21.*

Honda T, Gjertsen BT, Spurgers KS, Broines F, **Sangjun Lee**, Hobbs ML, Meyn RE, Roth JA, Logothetis C, McDonnell TJ. *Restoration of bax in prostate cancer suppresses tumor growth and augments therapeutic cell death induction. Anticancer Research, 2001, 21(5):3141-6.*

Sangjun Lee, TJ McDonnell: PhD Thesis: *"Functional Studies of Ras and Bcl-2 Oncogproteins in Keratinocyte Homeostasis and Multistep Skin Carcinogenesis" (Thesis Advisor Professor Timothy J. McDonell, MD, PhD); University of Texas-MD Anderson Cancer Center, Houston, TX 2004*

Nam D, Park K, Park C, Im Y, Kim M, **Sangjun Lee**, Hong S, Shin H, Kim J, Eoh W, McDonnell TJ. *Intracranial inhibition of glioma cell growth by cyclooxygenase-2 inhibitor celecoxib. Oncology reports, 2004, 11(2):263-8.*

Bigelow RLH, Chari NS, Unden AB, Spurgers KB, **Sangjun Lee**, Roop DR, Toftgard R, McDonnell TJ. *Transcriptional regulation of bcl-2 mediated by the sonic hedgehog signaling pathway through gli-1. Journal of Biological Chemistry, 2004, 279(2):1197-1205.*

Sangjun Lee, Syed K Mohsin, Sufeng Mao, Susan G Hilsenbeck, Dan Medina, and D Craig Allred. *Hormones, receptors, and growth in hyperplastic enlarged lobular units: early potential precursors of breast cancer. Breast Cancer Research, 2006, 8(1):R6 (designated as "Highly Accessed")*

Sangjun Lee, Nikhil S. Chari, Hyung Woo Kim, Xuemei Wang, Dennis R. Roop, Song H. Cho, John DiGiovanni, Timothy J. McDonnell. *Cooperation of Ha-ras and Bcl-2 During Multi-step Skin Carcinogenesis. Molecular Carcinogenesis, 2007 Dec;46(12):949-57*

Sangjun Lee, Dan Medina, Anna Tsimelzon, Sufeng Mao, Yun Wu, D. Craig Allred. *Alterations of Gene Expression in the Development of Early Hyperplastic Precursors of Breast Cancer. American Journal of Pathology, 2007, 171(1):252-262*

D. Craig Allred, Yun Wu, Sufeng Mao, Nagtegaal ID, **Sangjun Lee**, Charles M. Perou, Syed K. Mohsin, Peter P'Connell, Anna Tsimelzon, and Dan Medina. *Ductal Carcinoma In Situ and the Emergence of Diversity During Breast Cancer Evolution Clinical Cancer Research, 2008, 14(2) 370 - 378*

Nolan ME, Aranda V, **Sangjun Lee**, Lakshmi B, Basu S, Allred DC, Muthuswamy SK. *The polarity protein Par6 induces cell proliferation and is overexpressed in breast cancer. Cancer research 2008 Oct 15;68(20):8201-9*

Medina D, Edwards DG, Kittrell F, **Sangjun Lee**, Allred DC. *Intra-mammary Ductal Transplantation: A Tool to Study Premalignant Progression. (Journal of Mammary Gland Biology and Neoplasia June 2012, Volume 17, Issue 2, pp 131-133)*

Sangjun Lee, Stewart S, Nagtegaal I, Luo J, Wu Y, Colditz G, Medina D, Allred DC*. Differentially Expressed Genes Regulating the Progression of Ductal Carcinoma in Situ to Invasive Breast Cancer. (Cancer Res, 2012 Sep 72; 4574)*

Sangjun Lee, Eileen L. Heinrich, Wendy Lee, Carrie Luu, Jianming Lu, Vincent Chung, Marwan Fakih, Joseph Kim, *Epidermal Growth Factor Receptor Signaling to the MAPK Pathway Bypasses Ras in Pancreatic Cancer Cells* (manuscript under review at Pancreas, 2015)

Sangjun Lee, Eileen L. Heinrich1, Jianming Lu, Joseph Kim*, CCR9 Receptor Mediated Signaling through β-catenin and Identification of a Novel CCR9 Antagonist.* (manuscript under review at Molecular Oncology, 2015)

Sangjun Lee, Timothy J. McDonnell. *Restrained Terminal Differentiation and Sustained Stemness in neonatal skin by Ha-Ras and Bcl-2.* (manuscript under review at Journal of the European Academy of Dermatology and Venereology, 2015)

Manuscript preparation

Sangjun Lee, Behrouz Madahian, Carrie H Sutter, C. Micheal Dickens, Yong Huang, Patricia A. Russo, Shirlean Goodwin, Jose Russo, Ramin Homayouni, Thomas R. Sutter *A novel algorithm for prioritizing candidate genes driving malignant transformation of MCF10F cells and basal-like breast cancer.*

Fancher KS, **Sangjun Lee**, Allred DC, Mikaelian I, Woo YH, Li Q, Tetreault H, Evsikov AV, Churchill GA and Knowles BB. *Early Transcriptional Changes during Mouse and Human Mammary Carcinogenesis.*

Sangjun Lee, Sarah VanVickle-Chavez, Dan Medina, Anna Tsimelzon, Syed K. Mohsin, Sufeng Mao, Charles M. Perou and D. Craig Allred. *Apocrine Metaplasia and Estrogen Receptor-Negative Breast Cancer.*

Sangjun Lee, Sarah VanVickle-Chavez, Dan Medina, Syed K. Mohsin, Sufeng Mao, Carlos Genty, and D. Craig Allred. *Quantitative Elisa-like immunohistochemistry (QUELI)*

Sangjun Lee, Dan Medina, Lin Li, and D. Craig Allred. *DNA repair index and breast cancer risk.*

Sangjun Lee, Sheila Stewart, Dan Medina, and D. Craig Allred. *The Invasion promoting function of CILP and FAP in the progression of human ductal carcinoma in situ (DCIS) to invasive breast cancer (IBC).*