Chang K. Sung, Ph.D.

Professor & Interim Department Chair
Department of Biological and Health Sciences
MSC 158, Texas A&M University-Kingsville
700 University Blvd
Kingsville, TX 78363

Phone: 361-593-2061
chang.sung@tamuk.edu

EDUCATION

Ph.D.	University of Illinois at Chicago	Dec 2004	Biological Sciences
M.S.	Illinois Institute of Technology	May 1999	Biology
B.S.	Yeungnam University (South Korea)	Feb 1995	Applied Microbiology

PROFESSIONAL EXPERIENCE

2025-Present	Interim Chair, Department of Biological and Health Sciences Texas A&M University-Kingsville
2018-2025	Graduate Coordinator, Department of Biological and Health Sciences Texas A&M University-Kingsville
2019-Present	Member, Institutional Biosafety Committee Texas A&M University-Kingsville
2016-2017	Faculty Senator, Texas A&M University-Kingsville

TEACHING EXPERIENCE

2023-Present	Professor, Department of Biological and Health Sciences Texas A&M University-Kingsville
2018-2023	Associate Professor, Department of Biological and Health Sciences Texas A&M University-Kingsville
2013-2018	Assistant Professor, Department of Biological and Health Sciences Texas A&M University-Kingsville
2011-2013	Instructor, Department of Microbiology and Immunobiology Harvard Medical School, Boston, MA
2004-2011	Postdoctoral Fellow, Department of Pathology Harvard Medical School, Boston, MA

PROFESSIONAL ACTIVITIES

Review Editor on the Editorial Board of Frontiers in Genetics - Epigenomics and Epigenetics, 2020-present.
Graduate Council Representative, Texas A&M University-Kingsville, 2023.
Member, Genetics Society of America
Member, Korean-American Scientists and Engineers Association

SELECTED PUBLICATIONS

1. Kim, D.; Puig, A.; Rabiei, F.; Hawkins, E.J.; Hernandez, T.F.; Sung, C.K. (2024) Optimization of SOX2 Expression for Enhanced Glioblastoma Stem Cell Virotherapy. *Symmetry*, *16*, 1186. https://doi.org/10.3390/sym16091186. PMCID: PMC12061075; NIHMSID: NIHMS2022149; PMID: 40342640

2. Oh H-J, Imam-Aliagan AB, Kim Y-B, Kim H-J, Izaguirre IA, **Sung CK** and Yim H (2024) Clinical applications of circulating biomarkers in nonsmall cell lung cancer. **Front. Cell Dev. Biol.** 12:1449232. doi: 10.3389/fcell.2024.1449232. PMID: 39239557; PMCID: PMC11375801
3. Kim, D., Shin, D.H. and **Sung, C.K.** (2022) *The Optimal Balance between Oncolytic Viruses and Natural Killer cells: A Mathematical Approach* **Mathematics** (MDPI) 10(18), 3370
4. Kim, CH, Kim, DE, Kim, DH, Min, GH, Park, JW, Kim, YB, **Sung, C.K.** and Yim, H. (2022) *Mitotic protein kinase-driven crosstalk of machineries for mitosis and metastasis.* **Experimental & Molecular Medicine** doi: 10.1038/s12276-022-00750-y. PMID: 35379935; PMCID: PMC9076678.
5. **Sung, C.K.** and Yim, H. (2020) CRISPR-mediated promoter de/methylation technologies for gene regulation. **Archives of Pharmacal Research** 43(7):705-713. doi: 10.1007/s12272-020-01257-8. PMID: 32725389, PMCID: PMC8376176
6. **Sung, C.K.** and Yim, H. (2017) Roles of SALL2 in tumorigenesis. **Archives of Pharmacal Research** 40(2):146-151, doi: 10.1007/s12272-016-0874-x. PMID: 27957650
7. **Sung, C.K.** and Yim, H. (2015) The Tumor Suppressor Protein $p150^{Sal2}$ in Ovarian Carcinoma. **Tumor Biology** 36(2):489-94, PMID: 25608837
8. **Sung, C.K.**, Yim, H., Andrews, E., and Benjamin, T.L. (2014) A mouse polyomavirus-encoded microRNA targets the cellular apoptosis pathway through Smad2 inhibition. **Virology** 468-470C, 57-62. PMID: 25146733, PMCID: PMC4253860
9. **Sung C.K.**, Li D, Andrews E, Drapkin R, Benjamin T. (2013) Promoter methylation of the SALL2 tumor suppressor gene in ovarian cancers. **Mol Oncology** Jun;7(3):419-27. PMID: 23273547
10. **Sung C.K.***, Yim H*, Gu H, Li D, Andrews E, Duraisamy S, Li C, Drapkin R, Benjamin T. (2012) The polyoma virus large T binding protein p150 is a transcriptional repressor of c-MYC. **PLoS One** 7(9):e46486. *contributed equally. PMCID: PMC3460914
11. 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*** PMCID: PMC3486304
12. Andrews, A.*, 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** Mar;2(3):353-5. *contributed equally. PMCID: PMC3291505
13. **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 PMCID: PMC3058699 *contributed equally
14. 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. PMCID: PMC3269896
15. 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 NIHMSID: NIHMS349709
16. 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 PMCID: PMC2809769 *contributed equally
17. 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: 157-167 PMCID: PMC2722155 *Co-first authors
18. **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 PMCID: PMC1082825

19. 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
20. 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.
21. **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. PMCID: PMC93289

SELECTED PRESENTATIONS

Abcdy Guerrero and Chang Sung
Identification of Genes Driving Glioblastoma Stem Cell Phenotype.
29thAnnual Ronald E. McNair Scholars Program Research Symposium, November 4, 2024, Kingsville TX

Katherine R. Villarreal*†, Yibonne Cortez*†, Abcdy Guerrero*†, Erial J. Hawkins, Jimmy Ortiz, Mylee P. Soliz, Talia F. Hernandez, and Chang K. Sung, *Exploring Gene Expression Alterations in Glioblastoma Stem Cells: Uncovering Potential Therapeutic Targets.*
Health Sciences and Technology Research Symposium, October 26, 2024, Texas A&M University-Corpus Christi, Texas *Co-presenters; † These authors contributed equally to the work.

Christian R. Hernandez, Rigoberto Rosales, Erial J. Hawkins, Chang K. Sung, and Haeyoung Kim, *Frequent Mutations in the Guanine Quadruplex Structure of the CAG Promoter and Their Effect on Gene Expression in Human Cells.*
Health Sciences and Technology Research Symposium, October 26, 2024, Texas A&M University-Corpus Christi, Texas

Erial J Hawkins, Abdulhamid B Imam-Aliagan, Talia F Hernandez, Yibonne Cortez, Abcdy Guerrero, and Chang K Sung, *Exploring stemness markers in glioblastoma stem cells*.
50th Korean Cancer Association Annual Meeting & 10th International Cancer Conference, Seoul, South Korea, June 21, 2024

2nd place award
Carmen Cayo, Oscar Sanchez, Montamas Suntravat, Chang K. Sung, Emelyn Salazar, Elda E. Sánchez. *Isolation and identification of toxins belonging to the three-finger toxins family from the venom of Naja kaouthia (monocled cobra) to explore their biological effects in vitro.*
11th Young Researcher Conference. Texas A&M University. College Station, Texas, May 2023

Sarah Madiha*, Abdulhamid B Imam-Aliagan*, Erial J Hawkins, Talia F Hernandez, Dongwook Kim, Haeyoung Kim and Chang K Sung, *Identification of Stem-specific Genes in Human Glioblastoma Cancer Stem Cells*, Pathways Annual Symposium, Galveston, Texas, March 2, 2023 *Co-presenters

1st place award
Carmen Cayo, Oscar Sanchez, Montamas Suntravat, Chang K. Sung, Emelyn Salazar, Elda E. Sánchez. *Isolation and identification of toxins belonging to the three-finger toxins family from the venom of Naja kaouthia (monocled cobra) to explore their biological effects in vitro.* 18th TAMUS Pathways Student Research Symposium. Texas A&M University at Galveston. Galveston, Texas, March 2023

Carmen Cayo, Oscar Sanchez, Montamas Suntravat, Chang K. Sung, Emelyn Salazar, Elda E. Sánchez.

Isolation and identification of toxins belonging to the three-finger toxins family from the venom of Naja kaouthia (monocled cobra) to explore their biological effects in vitro.
13th Research Micro-Symposium. Texas A&M University-Kingsville, Department of Chemistry. Kingsville, Texas, November 2022

Carmen Cayo, Oscar Sanchez, Montamas Suntravat, Chang K. Sung, Emelyn Salazar, Elda E. Sánchez.
Evaluation of the neurotoxic effect of Naja kaouthia (monocled cobra) snake venom using an in vitro model of the glia (U-87) cell line.
11th Research Micro-Symposium. Texas A&M University-Kingsville, Department of Chemistry. Kingsville, Texas, November 2021

Chang Sung
Epigenetic Activation of a Tumor Suppressor Gene in Human Ovarian Carcinomas
45th Korean Cancer Association Annual Meeting & 5th International Cancer Conference, Seoul, Korea, June 21, 2019

Chang Sung
Reactivation of the SALL2 Tumor Suppressor Gene in Human Ovarian Cancer Cells. 2018 Southwest Texas Asian Symposium, Texas A&M University-Corpus Christi, November 2, 2018

Chang Sung
How to Stay Fresh in the Classroom. New Faculty Investment Program, Texas A&M University-Kingsville, February 24, 2017

Chang Sung
Epigenetic Regulation of the SALL2 Tumor Suppressor Gene in Human Ovarian Carcinomas. Irma Lerma Rangel College of Pharmacy, April 6, 2016

Chang Sung (Invited Poster Presentation)
Development of Research Proposals for the Biomedical Research Learning Experience. High Impact Practices in Higher Education Conference, Texas A&M University-Kingsville, April 13, 2018

GRANTS/AWARDS/HONORS/ETC.

Grants

Ongoing Research Support
SC3GM141756
Project Title: *Collaborative Activities of the Key Transcription Factors in Glioblastoma Stem-like Cancer Cells*
Source of Support: National Institutes of Health (NIH)
Period: 05/01/2021 – 03/31/2026
Granted Budget: $414,000
Project Goal: To identify therapeutic targets and develop promoter methylation technologies to suppress glioma stem-like cancer cells.
Role: Principal Investigator

Completed Research Support

2024-2025 Faculty Reinvestment Award
Source of Support: Texas A&M University-Kingsville

Period of Support: 04/25/2025 – 07/31/2025
Granted Budget: $5,000

COAS Spring 2025 Student Assistantship
Source of Support: College of Arts and Sciences, Texas A&M University-Kingsville
Graduate Student Supported: Mylee Soliz (MS Biology Program)
Period of Support: 02/28/2025 – 05/09/2025
Granted Budget: $660
Project Goal: To support Mylee Soliz, a graduate student in the MS Biology Program, and to investigate how a protease inhibitor regulates a key transcription factor in glioblastoma stem cells.
Role: Principal Investigator

SC2GM122686
Project Title: *Targeted Promoter Demethylation in Ovarian Cancer Cells*
Source of Support: National Institutes of Health (NIH)
Period: 09/01/2017 - 04/30/2021
Granted Budget: $413,996
Project Goal: To develop targeted demethylation technologies to suppress human ovarian carcinomas.
Role: Principal Investigator

Project Title: *Stem-Specific Gene Profiles in Human Glioblastoma Cancer Stem Cells.*
Source of Support: Great Texas Foundation
Period: 02/12/2024 - 05/09/2024
Granted Budget: $3,000
Project Goal: To support an undergraduate student, Mr. Yibonne Cortez (Biological and Health Sciences, TAMUK), and to identify stem-specific bio-markers in brain tumor cells.
Role: Principal Investigator

CBET- 1504174 Lee (PI)
Project Title: *MRI Acquisition of a CNC Micro-Milling Workstation to Enhance Multidisciplinary Research and Teaching at Texas A&M International University and Texas A&M Kingsville*
Source of Support: National Science Foundation (NSF)
Period: 11/04/2014 - 8/31/2017
Granted Budget: $171,736
Project Goal: To enrich tumor antigen-expressing cells with a microfluidic chip for quantitative analyses of cellular microRNAs.
Role: Co-PI

Honors and Awards
McNair Scholars Certificate of Appreciation, 2024
Olan Kruse Science Faculty Award, TAMUK 2020
Travel Award, 45th Korean Cancer Association Annual Meeting & 5th International Cancer Conference, 2019
Five Year Service Award, TAMUK 2019
Ronald E. McNair Scholars Certificate of Recognition, 2019
Honor Society of Phi Kappa Phi Certificate of Appreciation, 2018
McNair Scholars Certificate of Appreciation, 2015