HONG-GU KANG, Ph.D.

Associate Professor
Department of Biology

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1. PROFESSIONAL APPOINTMENTS

Position	*University*	*Dates*
Professor	Texas State University	Effective Sep. 2026
Associate Professor	Texas State University	2017 – 2026
Assistant Professor	Texas State University	2012 – 2017
Senior Research Associate	Boyce Thompson Institute at Cornell University	2009 – 2011

2. EDUCATIONAL BACKGROUND

Degree	*Year*	*University*	*Major*	*Advisor*
Postdoc	2000-2009	Cornell U; Boyce Thompson Inst.	Molecular Plant Pathology	Dr. Dan Klessig
Ph.D.	1994-2000	U of California, Los Angeles	Molecular Cell Biology	Dr. Karam Singh
M.S.	1992-1994	Seoul National University, Korea	Plant Molecular Biology	Dr. Yang Do Choi
B.S.	1988-1992	Seoul National University, Korea	Agricultural Chemistry	

3. SCHOLARLY/CREATIVE/RESEARCH

3.1. Publications

- Inamdar, S, Choity, TK, Park, DS, Hwang, S, **Kang, HG**, Kim, N (2026). Printed Thin-Film Silver Heaters Integrated for Microfluidic Isothermal DNA Amplification. *Biosensors and Bioelectronics.* Under Review.
- Inamdar, S, Sargordi, A, Choity, TK, Emami, A., Kim, JY, **Kang, HG**, Kim, N (2026). Additively Manufactured Electrothermal Thin-Film Heaters for On-Chip Isothermal DNA Amplification. 83, 108446. *Sensors and Actuators A: Physical.*
- Shadman W, Mannan M, Choity TK, Hwang S, Lee GH, **Kang HG**, Kim N (2026). Electrochemical detection of tRNA-derived fragments (tRFs) based on multi-functionalized carbon surface. 399, 117434. *Surfaces and Interfaces*.
- Pujara DS, Choity TK, Bordiya Y, Magdaleno SM, **Kang HG** (2026). Detection of tRNA-Derived Small RNAs in Arabidopsis thaliana via Northern Blotting: Exploring Potential Biomarkers for Phytohormone Analysis. 3026:209-219. *Methods in Molecular Biology.*
- Kim SI, Lyu H, Pujara DS, Bordiya Y, Bhatt PS, Mayorga J, Zogli PK, Kundu P, Chung H, Yan X, Zhang X, Kim J, Louis J, Yu Q, **Kang HG** (2025). A nuclear tRNA-derived fragment triggers immunity in Arabidopsis. 8: 533. *Communications Biology*
- Nam JC, Bhatt PS, Bonnard A, Pujara DS, **Kang HG** (2024) Arabidopsis MORC1 and MED9 interact to regulate defense gene expression and plant fitness. 40: 438-450. *Plant Pathology Journal*
- Nam JC, Bhatt PS, Kim SI, **Kang HG** (2023). Co-immunoprecipitation for assessing protein-protein interactions in Agrobacterium-mediated transient expression system in *Nicotiana benthamiana,* 2690:101-110. *Methods in Molecular Biology*
- Rahman, M, Haque, A, Pujara, DS, Mayorga, J, **Kang, HG**, Valles MD (2022). Automation of Luminescence Quantitation for High-Throughput Plant Phenotyping Using Image Processing and U-Net Segmentation. 117. *American Council on Science & Education.*
- Pujara DS, Kim SI, Nam JC, Mayorga J, Elmore I, Kumar M, Koiwa H, **Kang HG** (2021) Imaging-based resistance assay using enhanced luminescence-tagged *Pseudomonas syringae* revealed a complex epigenetic network in plant defense signaling pathways. 34:990-1000, *Molecular Plant-Microbe Interaction*
- Kim SI, Bordiya Y, Nam JC, Mayorga J, **Kang HG** (2021) High-throughput targeted transcriptional profiling of defense genes using RNA-mediated oligonucleotide Annealing, Selection, and Ligation with next-generation sequencing in Arabidopsis. 2328, 227-252. *Methods in Molecular Biology*
- Makhijaa G, Pujarab DS, Song I, You BH, **Kang HG** (2020) Constructing an automation table for an image-based Arabidopsis resistance assay. 6, 495–499. *Engineering*
- Koch A, **Kang HG**, Steinbrenner J, Dempsey DA, Klessig DF, Kogel KH. (2017) MORC Proteins: Novel Players

in Plant and Animal Health. 8, 1720. *Front Plant Sci.*

- Bordiya Y and **Kang HG** (2017) Genome-wide analysis of chromatin accessibility in Arabidopsis infected with *Pseudomonas syringae*. 1578, 263-272. *Methods in Molecular Biology*
- Bordiya Y, Zheng Y, Nam JC, Choi HW, Lee BK, Kim J, Klessig DF, Fei Z, **Kang HG** (2016) Pathogen Infection and MORC proteins Affect Chromatin Accessibility of Transposable Elements and Expression of Their Proximal Genes in Arabidopsis. 29, 674-687. *Molecular Plant-Microbe Interactions*
- DeFalco TA, Marshall CB, Munro K, **Kang HG**, Moeder W, Ikura M, Snedden WA, Yoshioka K (2016) Multiple calmodulin-binding sites positively and negatively regulate Arabidopsis CYCLIC NUCLEOTIDE-GATED CHANNEL. 28, 1738-1751. *Plant Cell*
- Moon JY, Oh CS, Lee JH, **Kang HG**, Park JM (2016) Endoplasmic Reticulum Stress Responses Function in the HRT-mediated Hypersensitive Response in Nicotiana benthamiana. 17, 1382-1397. *Molecular Plant Pathology*
- Manosalva P, Manohar M, Kogel KH, **Kang HG**, Klessig DF (2015) The GHKL ATPase MORC1 Modulates Species-Specific Plant Immunity in *Solanaceae*. 28:927-42, *Molecular Plant-Microbe Interactions*
- Langen G, von Einem S, Koch A, Imani J, Pai SB, Manohar M, Ehlers K, Choi HW, Claar M, Schmidt R, Mang HG, Bordiya Y, **Kang HG**, Klessig DF, Kogel KH (2014) The CRT1 subfamily of MORC ATPases Regulates Disease Resistance in Barley to Biotrophic and Necrotrophic Pathogens. 164:866-78, *Plant Physiology*
- **Kang HG***, Woo Choi H, von Einem S, Manosalva P, Ehlers K, Liu PP, Buxa SV, Moreau M, Mang HG, Kachroo P, Kogel KH, Klessig DF* (2012) CRT1 is a nuclear-translocated MORC endonuclease that participates in multiple levels of plant immunity. 3: 1297, *Nature Communications* (*co-correspondence)
- Mang HG, Qian W, Zhu Y, Qian J, **Kang HG**, Klessig DF, Hua J (2012) Abscisic Acid Deficiency Antagonizes High-Temperature Inhibition of Disease Resistance through Enhancing Nuclear Accumulation of Resistance Proteins SNC1 and RPS4 in Arabidopsis. 24: 1271-84, *Plant Cell*
- Lee HY, Bowen CH, Popescu GV, **Kang HG**, Kato N, Ma S, Dinesh-Kumar S, Snyder M, Popescu SC (2011) Arabidopsis RTNLB1 and RTNLB2 Reticulon-like proteins regulate intracellular trafficking and activity of the FLS2 immune receptor. 23: 3374-91, *Plant Cell*
- Park BS, Eo HJ, Jang IC, **Kang HG,** Song JT, Seo HS (2010) Ubiquitination of LHY by SINAT5 regulates flowering time and is inhibited by DET1. Biochemical & Biophysical Research Communications, 398, 242-246.
- **Kang HG**, Oh CS, Sato M, Katagiri F, Glazebrook J, Takahashi H, Kachroo P, Martin GB, Klessig DF 2010. Endosome-associated CRT1 functions early in resistance gene-mediated defense signaling in Arabidopsis and tobacco. 22: 918-36, *Plant Cell*
- **Kang HG**, Kuhl JC, Kachroo P, Klessig DF (2008) CRT1, an Arabidopsis ATPase that interacts with diverse resistance proteins and modulates disease resistance to Turnip Crinkle Virus. 3: 48-57, *Cell Host Microbe*
- Baxter J, Moeder W, Urquhart W, Shahinas D, Chin K, Christendat D, **Kang HG**, Angelova M, Kato N, Yoshioka K (2008). Identification of a functionally essential amino acid for Arabidopsis cyclic nucleotide gated ion channels using the chimeric ATCNGC11/12 gene. Plant Journal, 56, 457-469.
- Sekine KT, Kawakami S, Hase S, Kubota M, Ichinose Y, Shah J, **Kang HG**, Klessig DF, and Takahashi H (2008). High level expression of a virus resistance gene, *RCY1*, confers extreme resistance to *Cucumber mosaic virus* in *Arabidopsis thaliana*. *Molecular Plant-Microbe Interactions,* 21, 1398-1407.
- **Kang HG** and Klessig DF (2008). The involvement of the Arabidopsis CRT1 ATPase family in disease resistance protein-mediated signaling. *Plant Signaling & Behavior* 3, 689-690.
- Yoshioka K, Möder W, **Kang HG**, Kachroo P, Masmoud K, Berkowitz G, Klessig DF (2006) The Chimeric *Arabidopsis* Cyclic Nucleotide-Gated Ion Channel AtCNGC11/12 activates multiple pathogen resistance responses. *Plant Cell* 18, 747-763.
- Menke F*, **Kang HG***, Chen Z, Park JM, Kumar D, Klessig DF (2005) Tobacco transcription factor NtWRKY1 is phosphorylated by MAP kinase SIPK and mediates HR-like cell death in tobacco. *Molecular Plant-Microbe Interactions* 18, 1027-1034. (*equal contribution)
- **Kang HG** and Klessig DF (2005) Salicylic acid inducible *Arabidopsis* CK2-like activity phosphorylates TGA2. *Plant Molecular Biology* 57, 541-557.
- Chandra-Shekara AC, Navarre D, Kachroo A, **Kang HG**, Klessig DF, Kachroo P (2004) Signaling requirements and role of salicylic acid in *HRT*- and *rrt*-mediated resistance to turnip crinkle virus in Arabidopsis. *Plant Journal* 40, 647-659.
- **Kang HG**, Foley R, Onate L, Lin C, Singh KB (2003) Target genes for OBP3, a Dof transcription factor, include novel basic helix-loop-helix domain proteins inducible by salicylic acid. *Plant Journal* 35, 362-372.

- **Kang HG** and Singh KB (2000) Characterization of salicylic acid responsive *Arabidopsis* Dof domain proteins: overexpression of OBP3 leads to growth defects. *Plant Journal* 21, 329-340.
- **Kang HG**, Fang Y, Singh KB (1999) A glucocorticoid-inducible transcription system causes severe growth defects in *Arabidopsis* and induces defense-related genes. *Plant Journal* 20, 127-133.
- **Kang HG**, Park JW, Kim CH, Lim JY, Choi YD (1995) Translational enhancement by the leader of tobacco mosaic virus and soybean *glycinin* gene in transgenic tobacco plants. *Agricultural Chemistry & Biotechnology* 38, 224-231.
- Kang MH, **Kang HG**, Lee MG, Park SS, Lee HJ, Chae Y, Choi YD (1993) Molecular cloning of cytochrome P-450 oxidase gene in peppermint (*Menta Piperita*). *Molecules & Cells* 3, 283-288.
- Kim CH, **Kang HG**, Choi YD (1993) Interaction of nuclear factor with the 5' upstream region of soybean *Glycinin* Gene. *Molecules & Cells* 3, 165-170.
- Park JW, Kim CH**, Kang HG**, Choi YD (1992) Promoter sequence of soybean *Glycinin* gene regulates seed-specific expression in transgenic tobacco. *Molecules & Cells* 2, 297-302.

3.2. Patent

- **Kang, HG** and Kim SI (2023). MODULATING STRESS RESPONSES BY A NOVEL CHROMATIN-ASSOCIATED GUIDE RNA DERIVED FROM TRANSFER RNA – Published, US 20230112054A1
- **Kang, HG**, Mudiyanselage, UJ and Bhatt, PS (2026). ENGINEERING SMALL RNAS TO SELECTIVELY ACTIVATE A CUSTOM TARGET GENE – Provisional Patent Application *in prep*; Disclosure approved by Texas State University

3.3. Grants

- USDA-NIFA (2026-2029; single PI; $741,697). Characterization of tRNA-Derived small RNAs as Signaling Molecules and Positive Transcriptional Regulators in Plant Immunity.
- Materials Application Research Center Proposal-Texas State University (2022; lead PI; $28,000). Replacement of an aging prep-scale centrifuge; the department contributed 50%
- NSF-CAREER (2016-2023; single PI; $786,023). Characterization of epigenetic factors and their regulatory roles in modulating transposable elements, plant immunity and transgenerational inheritance.
- Texas State University Multi-disciplinary Internal Research Grant (2014-2015; lead PI; $25,000). Development of EIS-based device sensing epigenetic changes for early cancer detection.

Pending

- NSF (Jan 2027- Dec 2029; lead PI; $877,611). Building the Arabidopsis Resistance Atlas: A High-Throughput Genomic Resource for the Plant Science Community.

4. TEACHING

4.1. Courses taught

Course	*Title*	*Date*
BIO 7361C	Advanced Genomics and Bioinformatics	2017 – 2020
BIO 4370/5370	Genome Informatics	2018 – 2020
BIO 4441/5441	Cell Physiology	2013 – 2020; 2022 – present
BIO 4480/5480	Cytology and Microtechnique	2012 – 2016; 2021 – present
BIO 7102/5110	Seminar	2020 – present

4.2. Courses developed

Course	*Title*	*Date*
BIO 7361C	Advanced Genomics and Bioinformatics	2016
BIO 4370/5370	Genome Informatics	2017
BIO 4360	Molecular Biology	2023

5. SERVICES

5.1. Department

- Committee:
  - Tenure-Track Mentoring Committee:
    - Dr. Mar Huertas (2016 – 2021)
    - Dr. Camila Carlos-Shanley (2018 – 2022)
  - Faculty Search Committee:
    - Microbial Functional Genomics (2018)
    - Evolutionary Ecology (2023)
    - Microbiology Cluster (2024)
    - Aquatic Microbiome (2025)
  - Department Seminar Committee (2017 – present)
  - Strategic Hiring Plan Committee (2013)
- Facility management:
  - Managed Deionized Water in the Supple Building (2012 – 2018)
  - Managed Research Greenhouse (2014 – 2017)
  - Technical Support Personnel for department PC resources (2017 – present)
- Miscellaneous
  - Coordinated Name Change of Existing Major: "Microbiology" to "Microbiology and Molecular Genetics" (2023)
  - Judge: The 2nd Annual Departmental 3MT Competition (2015)
  - Judge: Department Colloquium (2012)

5.2. University

- Committee
  - Institutional Biosafety Committee
    - Member (2014 – 2021)
    - Chair (2021 – present)
  - Search Committee
    - Assistant Vice President and Chief Research Compliance Officer (2026)

5.3. Professional/Community

- Grant Panelist
  - NSF-IOS (2014; 2016; 2020; 2022)
  - USDA-NIFA (2016)
- Grant *Ad Hoc* Reviewer
  - NSF-IOS (2018; 2022; 2024; 2025); NSF-MCB (2025); NSF-IRES (2025)
  - Hungary National Research, Development and Innovation Office (2015)
  - German-Israeli Foundation for Scientific Research and Development (2012)
- Conference Organizer
  - Regional Scientific Committee: International Society for Molecular Plant-Microbe Interactions Meeting, (2026)
  - Organizer: Mini symposium in Plant Science at Boyce Thompson Institute (2022)
  - Session Chair: Epigenetics Session, Annual meeting of the American Society of Plant Biologists (2015)
  - Session Chair: Plant Pathogen Interactions Session, Annual meeting of the American Society of Plant Biologists (2008)
- Journal Reviewer:
  - *Trends in Plant Sciences, Plant Cell, Plant Physiology, Plant Journal, BMC-Plant Biology, Communications Biology, Planta, Molecular Plant Pathology, PLoS Pathogens, Frontiers in Plant Science, Frontiers in Microbiology, Plant Physiology and Biochemistry, Molecular Plant-Microbe Interactions*
- Journal Editor:
  - *Frontiers in Plant Science* (Review editor: 2015 – present)
  - *Molecular Plant-Microbe Interactions* (Associate editor: 2016 - 2019)
  - *Plant Biotechnology Reports* (Editor: 2019 – present)

- *Plant Pathology Journal* (Associate editor: 2025 – present)

- Invited Talks
  - Institution: Louisiana State University (2026), Chungnam National University (2026), Hunter College, CUNY (2026), Texas A&M (2026, 2016, 2013), Syracuse University (2026), Cornell University (2026), Seoul National University (2025, 2023, 2014, 2013), Yonsei University (2024), Korea Research Institute of Bioscience & Biotechnology (2024), University of Wyoming (2022), Colorado State University (2020), Korea Advanced Institute of Science and Technology (2019), Texas A&M AgriLife Dallas Center (2018), Chung-Ang University (2018), Korea University (2017, 2013), Tohoku University (2017), University of North Texas (2016), East Tennessee State University (2016), UT-Austin (2015), UTSA (2015), Penn State University (2015), Texas State University (2014), University of Toronto (2014), Baylor University (2013)
  - Conference: Plant Immunity Research Center, Busan (2022), National Science Foundation (2020), PIRC/BRL Joint Symposium, Gyoung Ju (2019), International Congress on Molecular Plant-Microbe Interactions, Greece (2014), Korean Society of Plant Pathology, Suncheon (2013), American Phytopathological Society, Austin (2013), American Society of Plant Biologists, Austin (2012)
- Community Service:
  - Science Fair Judge
    - Alamo Regional Academy of Science and Engineering (2017; 2019)
    - ExxonMobil Texas Science and Engineering Fair (2014; 2015)
    - Austin Energy Regional Science Festival (2014; 2015; 2016)
    - Bowie High School Science Fair (2013; 2014; 2015)
  - San Marcos High School Science Program Advisor (2016 – present)
    - Advisor, research and design course
    - Advisor, science fair projects
    - Research mentor, summer intern program (2016 – 2022)
  - Korean-American Scientist & Engineer Association
    - Scholarship Committee (2024 – present)
    - Auditor, Austin Chapter (2021 – present)
    - President, Austin Chapter (2017 – 2020)
    - Vice-president, Austin Chapter (2013 – 2016)
    - Local organizer, National Mathematics & Science Competition (2017 – 2020)

6. FELLOWSHIPS, AWARDS, HONORS

- 2020: Presidential Research Award, Texas State University
- 2017: College Achievement Awards, College of Science & Engineering, Texas State University
- 2016: NSF CAREER Award
- 2015: ASPB Recognition Travel Award - American Society of Plant Biologist, Minneapolis, MN
- 2013: Travel Award – Plant Biology 2013 - American Society of Plant Biologist, Providence, RI
- 2013: Travel Award – International Conference on Arabidopsis Research, Sydney, Australia
- 2013: Travel Award - Scientists and Engineers Early Career Development (SEECD) Workshop, Korean-American Scientist and Engineer Association, Atlanta, GA
- 1994-1997: Korean Ministry of Education Pre-doctoral Fellowship