

Curriculum Vitae

Kwon Kyoo Kang, Ph.D.

Professor

Plant Breeding and Molecular Genetics



Address

Business Address in Korea: Department of Horticultural Life Science, College of Agriculture, Life Sciences, Hankyong National University, 327 Chungang-ro, Anseong-si 17579, Republic of KOREA,

Phone : +82-31-670-5104, **FAX :** +82-31-670-5100, **E-mail :** kykang@hknu.ac.kr

Education

Ph.D., Dept. of Agronomy, Tohoku University, Sendai, Japan, Mar. 1994.

Dissertation : “Molecular genetical and physiological studies on a 5-methyltryptophan resistant mutant(MR1) and tillering inbred line(IK) in maize (*Zea mays* L.)”

Major professor: Dr. Toshiaki Kameya

M.S., Dept. of Agronomy, Chungnam National University, Taejeon, Korea, Feb. 1990.

Thesis : “Chromosomal location of gene for tiller in maize”

Major professor: Dr. Bong Ho Choi

B. S., Dept. of Agronomy, ChungNam National University, Taejeon, Korea, Feb. 1986.

Professional Experiences

January, 2013-Present: Editor, Plant Breeding and Biotechnology journal,

<http://www.plantbreedbio.org/>

Mar. 1996-Present: Assistant, Associate, and Full professor, Department of Horticulture,
College of Agriculture, life Sciences, Hankyong National University,
Anseong, Korea

Jan. 2007- Aug. 2008: Visiting Professor, Dept. of Plant Breeding & Genetics, Auburn
University

Research Area

1. Functional genomics based on “Gain-of-Function” and “Loss-of-Function” with FOX-hunting system, TALEN, ZFN, AS, RNAi, and CRISPR/CAS9 gene editing system
2. Identification of transcription factors require for RC-mediated regulation of DFR promoter in proanthocyanidin biosynthesis
3. Cloning and expression Analysis of pre-harvest sprouting (PHS) Candidate Genes
4. Functional analysis of genes related to starch biosynthesis and development of high quality rice varieties
5. Antimicrobial peptide production on the plant tissues

Reviewer: Professional journals

- Plant Breeding and Biotechnology (2013 –)
- Acta Physiologiae Plantarum (2013 –)
- Breeding Science (2013 –)
- PLoS One (2013 –)
- European Journal of Plant Pathology (2012 –)
- Rice Science (2012 –)
- BMC Biotechnology (2010 –)
- Molecules and Cells (2010 –)
- Plant Biotechnology Reports (2010 –)
- Molecular Breeding (2010 –)
- Theoretical and Applied Genetics (2008 –)
- Journal of Cereal Science (2008 –)
- Plant Molecular Biology (2008 –)
- Plant Cell Reports (2008 –)
- African Journal of Plant Biotechnology (2009 –)
- The Genetics Society of Korea (2008 –)
- Korean Journal of Breeding (1999 –)
- Korean Journal of Crop Science (2001 –)
- Korean Journal of Medicinal Crop Science (2001 –)

< Grants >

- ◆ Development of High-Value Added Rice Varieties and Mass Analysis of Functional Genes Through Mutation Genomics.
PIs: Yong-Gu Cho, Dong-Sub Kim, Kwon-Kyu Kang, Bo-Kyong Kim. Supported by Rural Development Administration -- \$1,000,000; May 2007~ Dec. 2010.

- ◆ Iron Fortification of Grains by Introducing Recombinant Gene of Ferritin in Rice.
PIs: Yong-Gu Cho, Kwon-Kyu Kang. Supported by Ministry of Agriculture and Forestry -- \$240,000; Dec. 1998~Nov. 2002.

- ◆ Development of Transgenic Rice Improved in Iron Metabolism by Introducing Genes Related to Iron Uptake and Storage.
PIs: Yong-Gu Cho, Kwon-Kyu Kang, Beom-Heon Song. Supported by Ministry of Agriculture and Forestry -- \$240,000; Aug. 2001~Aug. 2004.

- ◆ Variety Breeding with Multi-disease Resistance for Import Substitution in Tomato
PIs: Kwon Kyoo Kang, Myong Kwon Kim Supported by Ministry of Agriculture and Forestry--\$5,268,000; Aug. 2013~Aug. 2021.

< Publications >

1. Shadi Rahimi, Kwon-Kyoo Kang, Yong-Gu Cho. (2016) Global Trends in Plant Genomics Research to Improve Crop Productivity at PAG XXIV Conference. Plant Breed. Biotech. 4(1):1~15.
2. Franz Marielle Nogoy, Shadi Rahimi, Kwon-Kyoo Kang, Yong-Gu Cho. (2016) Genomics Researches and Their Applications in Plant Breeding at PAG XXIV Conference. Plant Breed. Biotech. 4(1):16~28.
3. Md. Amdadul Huq, Shahina Akter, Yu-Jin Jung, Ill Sup Nou, Yong-Gu Cho, Kwon-Kyoo Kang. (2016) Genome Sequencing, a Milestone for Genomic Research and Plant Breeding. Plant Breed. Biotech. 4(1):29-39.
4. Gopal Saha, Jong-In Park, Hoytaek Kim, Kwon-Kyoo Kang, Yong-Gu Cho, Ill-Sup Nou. (2016) MADS-Box Genes Are Associated with the Petaloidy/Sepaloidy of Stamens in Cytoplasmic Male Sterile Brassica. Plant Breed. Biotech. 4(1):40-50.
5. Marjohn C. Niño, Hye Jung Lee, Joonki Kim, Sailila E. Abdula, Yu-Jin Jung, Kwon-Kyoo Kang, Illsup Nou, and Yong-Gu Cho. (2015) Enhancement of Rice Resistance to Bacterial Blight by Overexpressing *BrCP3* Gene of *Brassica rapa*. Plant Breed. Biotech. 3(4):355~365.

6. Sailila E. Abdula, Hye-Jung Lee, Hojin Ryu, Kwon Kyoo Kang, Illsup Nou, Mark E. Sorrells, Yong-Gu Cho. (2015) Overexpression of BrCIPK1 Gene Enhances Abiotic Stress Tolerance by Increasing Proline Biosynthesis in Rice. DOI 10.1007/s11105-015-0939-x.
7. Yu Jin Jung, Franz Marielle Nogoy, Yong-Gu Cho, Kwon Kyoo Kang. (2015) Development of high tryptophan GM rice and its transcriptome analysis. J Plant Biotechnol. 42:186~195.
8. Yu Jin Jung, Jung Ho Kyoung, Ill Sup Nou, Yong Gu Cho, Kwon Kyoo Kang. (2015) Molecular characterization of the UDP-glucose 4-epimerase (*BrUGE*) gene family in response to biotic and abiotic stress in Chinese cabbage (*Brassica rapa*). Plant Biotechnology Reports 9: 339~350.
9. In Hye Lee, Jang Sun Choi, Marjohn Nino, Yong-Gu Cho, Kwon Kyoo Kang, and Yu Jin Jung. (2015) Regulation of Abiotic Stress Response Through NtROS2a-mediated Demethylation in Tobacco. Plant Breed. Biotech. 3(2):108~118.
10. Hye Jung Lee, Moo-Geun Jee, Joonki Kim, Franz M.C. Nogoy, Marjohn C. Niño, Dal-A Yu, Me Sun Kim, Mingmao Sun, Kwon-Kyoo Kang, Illsup Nou, Yong-Gu Cho. (2014) Modification of Starch Composition Using RNAi Targeting *Soluble Starch Synthase 1* in *Japonica* Rice. Plant Breed. Biotech. 2(3):301~312.
11. Yu-Jin Jung, Yong-Gu Cho, Ill Sup Nou, Kwon Kyoo Kang. (2014) Transgenic Tomato Plants Ectopically Expressing *BrRZFP1* Gene Encoding C3HC4-type RING Zinc Finger Protein. Plant Breed. Biotech. 2(1):25~34.
12. Yu-Jin Jung, Yong Gu Cho, Ill Sup Nou, and Kwon Kyoo Kang. (2014) Transgenic Tomato Plants Ectopically Expressing *BrRZFP1* Gene Encoding C3HC4-type RING Zinc Finger Protein. Plant Breed. Biotech. 2(1):25~34.
13. Hye Jung Lee, Sailila E. Abdula, Dae Won Jang, Sung-Han Park, Ung-Han Yoon, Yu Jin Jung, Kwon Kyoo Kang, Ill Sup Nou, Yong-Gu Cho. (2013) Overexpression of the glutamine synthetase gene modulates oxidative stress response in rice after exposure to cadmium stress. Plant Cell Rep 32:1521~1529.
14. Sailila E. Abdula, Hye Jung Lee, Moo Geun Jee, Yu Jin Jung, Kwon Kyoo Kang, Ill Sup Nou, Sang-Bok Lee, Won-Ha Yang, Yong-Gu Cho (2013) Development and Identification of Transgenic Rice Lines with Abiotic Stress Tolerance by using a Full-length Overexpressor Gene Hunting System. Plant Breed. Biotech. 1(1):33~48.
15. Yu Jin Jung, Ill Sup Nou, Sung Kee Hong, Young Kee Lee, Yong-Gu Cho, Kwon Kyoo Kang (2013) Enhanced bacterial resistance in transgenic tobacco expressing a *BrRZFP1* encoding a C3HC4-type RING zinc finger protein from *Brassica rapa*. J Plant Biotechnol 40:49~54.

16. Kyung Hee Han, Yu Jin Jung, Uuganchimeg Bayarsaikhan, In Hye Lee, Jang Sun Choi, Ill Sup Nou, Yong-Gu Cho, Kwon Kyoo Kang. (2013) Overexpression of *BrSAC1* encoding a phosphoinositide phosphatase isolated from Chinese cabbage (*Brassica rapa* L) improved tolerance to cold, dehydration, and salt stresses in transgenic tobacco. African Journal of Biotechnology Vol. 12(15): 1782~1792.
17. Yu Jin Jung, Kye Dong Lee, Yong-Gu Cho, Ill Sup Nou, Kwon Kyoo Kang. (2013) Molecular characterization of *BrRZFPs* genes encoding C3HC4 type RING zinc finger protein under abiotic stress from Chinese cabbage (*Brassica rapa* L.). J Plant Biotechnol 40:102~110.
18. Arasan SKT, Jong-In Park, Ahmed NU, Hee-Jeong Jung, In-Ho Lee, Yong-Gu Cho, Yong-Pyo Lim, Kwon-Kyoo Kang, Ill-Sup Nou. (2013) Gene ontology based characterization of Expressed Sequence Tags (ESTs). IJEB 51(7):522~530
19. Yu Jin Jung, Jang Sun Choi, Ju Nam Sun, Ill Sup Nou, Yong-Gu Cho, Kwon Kyoo Kang (2012) Molecular and functional characterization of a *Brmecp* gene encoding 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase from *Brassica rapa*. J Plant Biotechnol 39:189~195.
20. Yu Jin Jung, Hye Jung Lee, Jang Sun Choi, Yong-Gu Cho, Ill Sup Nou, Kwon Kyoo Kang (2012) Isolation and functional characterization of *BrUGT* gene encoding a UDP-glycosyltransferase from Chinese cabbage (*Brassica rapa*). J Plant Biotechnol 39:212~218.
21. Sailila Abdula, Hye-Jung Lee, Reneeliza Melgar, Mingmao Sun, Kwon-Kyoo Kang, Yong-Gu Cho (2011) Isolation and characterization of *Bradhl* gene encoding alcohol dehydrogenase from Chinese cabbage (*Brassica rapa*). J. Plant Biotechnology 38(1): 77~86.
22. Yu Jin Jung, In Hye Lee, Kyung Hee Han, Cho Yee Son, Yong Gu Cho, Myung Chul Lee, Kwon Kyoo Kang (2010) Expression analysis and characterization of rice oligopeptide transport gene (*OsOPT10*) that contribute to salt stress tolerance. J. Plant Biotechnology 37(4):483~493.
23. Kang Kwon-Kyoo, Song Beom-Heon, Lee Gyong-A, Lee Hye-Jung, Park Jin-Ha, Jung Yu-Jin, Cho Yong-Gu (2010) Increment of fructan biosynthesis in rice by transformation of 1-sst and 1-fft genes isolated from jerusalem artichoke (*Helianthus tuberosus* L.). J. Plant Biotechnology 37(1):102~109.
24. Cho, Yong-Gu, Hyung-Keun Kim, Jang-Sun Choi, Yu-Jin Jung, Kwon-Kyoo Kang (2009) Iron Fortification of Grains by Introducing A Recombinant Gene of Ferritin with Seed Promoters in Rice. J. Plant Biotechnology 36(1): 87-95.

< Patent >

1. Cho-Y-G, Hye-Jung Lee, Sailila Abdula, Kwon Kyoo Kang. (2014) OsMLD gene increasing tolerance to salt stress from rice and uses thereof: Korean Patent Registration # 10-1376522, Mar. 04. 2014.
2. Kwon Kyoo Kang, Yujin Jung, Hye-Jung Lee, Cho-Y-G. (2014) Zinc Finger Nuclease for Targeting Soluble Starch Synthase 4A in Rice and Use Thereof: Korean Patent Application # 10-2014-0059106, May. 16. 2014.
3. Kang-K-K, Choi-J-S, Jung-Y-J, Lee-S-C, Kim-D-S, Cho-Y-G. (2013) BrCPI gene enhancing plant tolerance to abiotic stress and uses thereof: Korean Patent Registration # 10-1257000, April. 16. 2013.
4. Kwon Kyoo Kang, Yujin Jung, Hye-Jung Lee, Cho-Y-G. (2013) Anthranilate Synthase Mutant Having Activity of Increasing Amino Acid Content in Plant and Use Thereof: Korean Patent Application # 10-2013-0127844, Oct. 25. 2013.
5. Cho-Y-G, Kang-K-K, Dong-Seob Kim, Hong-Sig Kim. (2013) ADH gene increasing seed germination of plant at anaerobic condition and uses thereof : Korean Patent Registration # 10-1238259, Feb. 22. 2013.
6. Kwon Kyoo Kang, Yujin Jung, Kye Dong Lee, Cho-Y-G, Illsup Nou. (2012) Method for producing transgenic plant with increased resistance to various environmental stresses using BrRZFP1 gene and the plant thereof: Korean Patent Application # 10-2012-0116213, Oct. 18. 2012.
7. Cho-Y-G, Kang-K-K, Dong-Seob Kim, Hong-Sig Kim. (2010) ADH gene increasing seed germination of plant at anaerobic condition and uses thereof : Korean Patent Application # 10-2010-0111869, Nov. 11. 2010.
8. Kang-K-K, Choi-J-S, Jung-Y-J, Lee-S-C, Kim-D-S, Cho-Y-G. (2009) BrCPI gene enhancing plant tolerance to abiotic stress and uses thereof: Korean Patent Application # 10-2009-0108220, Nov. 10. 2009.
9. Kang-K-K, Choi-J-S, Jung-Y-J, Lee-S-C, Kim-D-S, Cho-Y-G. (2009) Novel Brmdr1 gene originated from *Brassica rapa*: Korean Patent Application # 10-2009-0108385, Nov. 11. 2009.
10. Song-B-H, Cho-Y-G, Kang-K-K. (2007) Fructan enriched cold-resistant plants transformed with FFT genes : Korean Patent Registration # 10-0752987, Aug. 22, 2007.
11. Song-B-H, Cho-Y-G, Kang-K-K. (2007) Fructan enriched cold-resistant plants transformed with SST genes : Korean Patent Registration # 10-0752988, Aug. 22, 2007.
12. Cho-Y-G, Kang-K-K. (2005) Transgenic Rice with Ferritin Gene: Korean Patent Registration # 10-0471679, Feb. 2, 2005.
13. Cho-Y-G, Kang-K-K, Song-B-H. (2007) Transgenic rice with nicotianamine synthase gene : Korean Patent Application # 10-2007-0122528, Nov. 29, 2007.

< Conferences >

1. Reneeliza Jean Melgar, Ming-Mao Sun, Kwon-Kyoo Kang, Dong-Sub Kim, Sun-Hee Woo, Hong-Sig Kim, Yong-Gu Cho. 2008 Development of Transgenic Rice Plants Using Full-length cDNA thru High-Speed *Agrobacterium* Transformation. *6th International Symposium on Rice Functional Genomics*. Jeju 2008. 11. 10-12.
2. Jin-ha Park, Beom-Heon Song, Kwon-Kyoo Kang, Yong-Gu Cho. 2008 Molecular Cloning and Expression of 1-Sucrose:Sucrose Fructosyltransferase Gene Encoding Fructan Biosynthesis with a Barley 6-SFT Promoter in Rice. *5th International Crop Science Congress*. April 14-18, 2008.
3. Park-J-H, Kim-T-J, Kim-S-H, Park-J-H, Sun-M-M, Melgar-R-J, Ju-Y-G, Kang-K-K, Kim-D-S, Kim-B-K, and Cho-Y-G. 2008 Development of transgenic plants with full-length cDNA using *Agrobacterium*-mediated transformation in rice. *5th International Crop Science Congress*. April 14-18, 2008.
4. Kang Kwon Kyoo, Yong Gu Cho. 2000. Variation of iron contents and expression of Ferritin gene in rice. *International Conference for Science and Technology. Workshop for Biotechnology*. 123-124.
5. Choong-Hyo Yun, Ga-Ram Lee, Jin-Hyoung Park, Yong-Gu Cho, Moo Young Eun, Ho-Il Kim. 2000. Molecular characterization of receptor-like gene family in rice. *Plant and Animal Genome VIII*. (San Diego, USA)
6. Kang, Kwon Kyoo and Yong Gu Cho. 2000. Isolation and characterization of cDNA encoding the iron storage protein in rice (*Oryza sativa L.*). *4th International Rice Genetics Symposium*. Los Banos, Laguna, Philippines. October 22-27

REFERENCES Available upon request