CURRICULUM VITAE

Kedong Da Ph.D.

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TITLE
Director/Senior Research Scholar

ADDRESS
Department of Horticultural Science
North Carolina State University
Raleigh, NC 27695-7609

EDUCATION
Ph.D. Horticulture biotechnology, Shandong Agricultural University, Taian, China, 1999
M. S. Horticulture biotechnology, Shandong Agricultural University, Taian, China, 1994
B.S. Horticulture, Gansu Agricultural University, Lanzhou, China, 1990

SOCIAL ORGANIZATIONN
1. Sigma Xi, The Scientific Research Society
2. The American Society for Horticultural Science
3. Society for In Vitro Biology
4. International Society for Horticultural Science

LEADERSHIP ACIEVEMENT
1. Certificate. Leadership Southside XIX, Danville, Pittsylvania County Chamber of commerce. Virginia
2. Chair of Asian Horticulture Working Group, American Society for Horticulture Science,
3. Endowment Committee Member, American Society for Horticulture Science

PATENT
US Patent No: US 9,055,721B2
Methods and media formulations for large-scale and efficient micropropagation of bio-energy grasses

GRANT
1. $ 1,000.000 Danville regional foundation 2010 PI. IALR Commercial Plant Propagation Facility
2. $ 23,000 VDACS-USDA 2015 PI. Strengthen and Develop Asian Pear Market in Virginia
3. $ 18,000 Virginia Agriculture Council 2016 PI. Cucumber grafting methods and rootstock breeding

PROFESSIONAL EMPLOYMENT

Director
Plant Transformation Laboratory, Department of Horticulture, CALS, North Carolina State University. 06/2020 - present

Lead Scientist
Syngenta Seeds, RTP, North Carolina. 10/2019 – 06/2020

Lead Scientist
Phytelligence, Smart Agriculture, Portland, Oregon. 06/2018 - 10/2019

Senior Scientist (Supervisor)
Institute for Advanced Learning and Research, Danville, Virginia. 10/2011 – 06/2018

Adjunct Professor
Department of Horticulture, Virginia Tech, Blacksburg, Virginia. 10/2011 to 06/2018

Director
Dan River Plant Propagation Center, Danville, Virginia. 10/ 2011 - 10/2012

Scientist/Project Manager
Institute for Advanced Learning and Research, Danville, Virginia. 10/2007 -10/2011

Research Professional
NESPAL-University of Georgia; USDA-ARS, Tifton, Georgia. 10/2004 - 10/2007

Senior Scientist
Konkuk University, KV Bio, Seoul, Korea Republic. 05/2003 - 10/2004

Visiting Scientist
Swedish University of Agriculture, Dept. of Horticulture, Alnarp, Sweden. 01/2003 - 05/2003

Associate Professor (faculty)
College of Horticulture, Shandong Agricultural University (SDAU), Taian Shandong, China. 07/2002 - 06/2006

Director
Horticulture Biotechnology Center, College of Horticulture, SDAU, Taian Shandong, China. 07/2002 - 06/2006

Assistant Professor
College of Horticulture, Shandong Agricultural University, Taian Shandong, China. 07/1994 - 07/2002

RESEARCH EXPERIENCE

Plant transformation, gene editing 2020-present

1. Corn, cotton, wheat, soybean transformation
2. Potato, sweet potato, tomato transformation
3. Specialty crop tissue culture, transformation

DH breeding 2019-2020

1. Anther culture
2. Microspore culture

Commercial tissue culture, gene editing 2018-2019

1. Sweet cherry rootstock and scion tissue culture micro-propagation
2. Blueberry tissue culture micro-propagation
3. Strawberry tissue culture micro-propagation
4. Grape tissue culture micro-propagation
5. Pear tissue culture micro-propagation
6. Cherry leaf culture organogenesis and plant regeneration
7. Cherry dwarf rootstock in vitro culture elongation method
8. Strawberry leaf culture organogenesis and plant regeneration

High value horticulture 2013-2018

1. Greenhouse English cucumber production system
2. Greenhouse cherry tomato production system
3. Cucumber grafting technology
4. Cucumber rootstock breeding
5. Strengthen and develop Asian pear market in Virginia
6. High yield purple sweet potato production system in Virginia Piedmont

Functional foods 2014-2018

1. Purple sweet potato breeding
2. Sweet potato virus elimination
3. Edible lily

Plant tissue culture 2009-2018

1. Purple sweet potato virus free plant initiation and in vitro propagation
2. Miscanthus sinensis tissue culture regeneration
3. Lily (Easter, Oriental, Asiatic, O-T) tissue culture organogenesis and somatic embryogenesis
4. Rex begonia leaf culture organogenesis
5. Azalea tissue culture micropropagation
6. Arundo Donax callus culture regeneration
7. Miscanthus giganteus tissue culture commercialization
8. Tea rose tissue culture and in vitro propagation
9. Iceland poppy cell suspension culture and somatic embryogenesis
10. Angels trumpet micropropagation
11. RAPD analysis of somaclonal variation in tissue cultured plants

In vitro breeding

1. Daylily embryo rescue and triploid breeding
2. In vitro breeding of foliage color mutant in daylily
3. In vitro breeding of foliage color mutant in Easter lily
4. Pineapple lily somatic embryogenesis and in vitro breeding
5. Daylily school color breeding

DNA methylation, AFLP and MSAP 2007-2009

1. DNA methylation and gene expression in response to plant growth beneficial bacteria inoculation
2. Methylation sensitive amplification polymorphism (MSAP)
3. Radioactive free AFLP
4. PAGE gel technology
5. Gene clone
6. Real time PCR
7. DNA sequence

Cotton genetic transformation 2004-2007

1. Development of tissue culture protocol for elite Georgia cotton lines
2. Green fluorescent protein (GFP) gene as a visual selection marker for genetic transformation of cotton
3. Single cell genetic transformation in cotton
4. Cotton SSR markers

Corn pest control and plant-insect interaction 2005-2006

1. Corn insect resistance breeding
2. Physiological response of corn plants to insect damage
3. Biological control of stink bug in corn field

Orchid commercial tissue culture and breeding 2003-2004

1. Phalaenopsis orchid tissue culture commercialization
2. Genetic transformation of Phalaenopsis orchid aiming at flower color control

Ornamental plant tissue culture and biotech breeding 2000-2003

1. Tissue culture regeneration, micro-propagation and pot plant production of begonia (*Begonia X Elatior*)
2. Tissue culture regeneration, micropropagation and pot plant production of trailing petunia (*Petunia hybrida*)
3. Tissue culture micropropagation of lisianthus (*Eustoma grandiflorum*)
4. Tissue culture, micropropagation and pot plant production of *Snningia speciosa*
5. Tissue culture, regeneration and micropropagation of *Amaryllis vittata*
6. Tissue culture, micropropagation and pot plant production of mini-rose (*Rose hybrida*)
7. Agrobacterium mediated transformation of begonia (*Begonia X Elatior*) with CpTI gene
8. Agrobacterium mediated transformation of petunia (*Petunia hybrida*) with CHS gene
9. Agrobacterium mediated transformation of Chinese chive (*Allium tubersume Rottle*) with CpTI gene

Fruit tree biotechnology 1996-1999

1. Construction of super expression binary vector harboring cowpea trypsin inhibitor (CpTI) gene
2. Apple tissue culture and plant regeneration
3. Agrobacterium mediated transformation of apple
4. RAPD analysis of somaclonal variation in apple
5. BAC library construction of a dwarf apple germplasm
6. Analysis of DNA fingerprint between sport apple and its parent by RAPD and AFLP

Fruit tree cultivation and breeding 1991-1996

1. Water efficient orchard management system-peach, apple, grape and pear
2. High yield fruit tree pruning technology-peach, apple, grape and pear
3. Fruit quality control through cultivation practice
4. Tissue culture of fruit trees, including apple, cherry, and grape
5. Research of gingko germplasms toward development of bio-active beverages
6. Mutation breeding of apple and chestnut toward fruit color, nut size and yields.

SEMINARS

Daylily tissue culture and in vitro breeding	2015
Pineapple lily and oriental lily somatic embryogenesis	2013
Agrobacterium mediated genetic transformation of plants	2012
Plant artificial seed technology	2012
Commercial plant propagation technology and breeding	2011
Ornamental poppy biotechnology	2010
Plant asexual propagation	2010
DNA sequence technology	2009
PAGE gel technology	2009

PUBLICATIONS

Invited Book Chapter:

Da, K. Plant tissue culture and mutation breeding. In Cheng Xuesen (eds) (2002), Horticultural Plant Breeding, Shandong Sci. & Tech. Publisher. China.

Proceeding Chapters:

1. **Da, K.** and Shu, H.R. Progress in apple somatic embryogenesis. Zhu Dewei (eds) (2001) International proceedings in biotechnology application in horticultural plants. China Forestry Publisher. Beijing, China.

2. **Da, K.,** McCurdy, J., Ozias-Akins, P., May, L. and Chee, P. 2006. Progress toward the development of transgenic cotton cultivars adapted to Georgia environments. http://www.griffin.uga.edu/caes/cotton/rerpubs/2005/p131.pdf

3. Ni, X., Krakowsky, M. and **Da, K.** 2005. Evaluation of Corn Hybrids for Resistance to Insects. http://www.griffin.uga.edu/swvt/2005/cn05/RR701-insect.pdf

4. **Da, K**., Zhang, S. and Shu, H. 2001. Progress in apple embroidgenesis. International symposium on biotechnology application in horticultural crops. China Agri. Sci. Press, Beijing, China. P43-47

Research Articles:

1. **Da K**., Farish-Williford, H. and Flinn, B. 2013. Acclimatization of Micro-propagated Icelandic Poppy 'Temptress' Plantlets. Acta Horticulturae. 988:93-98
2. Kim, S., **Da, K**. and Mei, C. 2012. An efficient system for high-quality large-scale micro-propagation of Miscanthus x giganteus plants. In Vitro Cellular & Developmental Biology – Plant. 48(6):613-619
3. **Da, K.**, Nowak, J.and Flinn, B. 2012. Potato cytosine methylation and gene expression changes induced by a beneficial bacterial endophyte, Burkholderia phytofirmans strain PsJN. Plant Physiol Biochem. 50(1):24-34.
4. Ni, X., **Da, K.**, Buntin, D., Cottrell, T. E., Tillman, P. G.**,** Olson, D. M**.**, Powell, R., Jr., Lee, R. D., Wilson, J. P. and Scully, B. T. 2010. Impact of brown stink bug (Heteroptera: Pentatomidae) feeding on corn grain yield components and quality. Journal of Economic Entomology. J. Econ. Entomol. 103(6): 2072-2079
5. Ni, X., **Da, K.**, Buntin, D.and Brown S. 2008. Physiological basis of fall armyworm (Lepidoptera:Noctuidae) resistance in seedlings of maize inbred lines with varying levels of silk maysin. Florida Entomologist. 91(4):537-545
6. Zang, Y., Zheng, W. and **Da**, **K.** 2004. Effect of different plant growth regulators on apple roo ting in vitro. J. Shihezi Univ. 22（3）：201－203
7. Zang,Y., Zheng, W. and **Da**, **K.** 2004. Progress on biochemical change during plant somatic embryogenesis. J Shandong Agri. Univ. 35(1):131-136.
8. Zang, Y., Zheng, W. and **Da**, **K.** 2004. Progress on apple leaf culture and regeneration. Biotechnology. （2）:15－18.
9. Zang,Y., Zhang, S.and **Da, K.** 2004. Studies on leaf regeneration, micro-propagation and pot plant production in trailing petunia (Petunia Hybrida). Acta Agriculturea Nuclestae Sinica. 18（1）:18－21
10. **Da**, **K.**, Zhang, S., Zang, Y., Wu, L. and Shu, H. 2004. Morphological study of direct somatic embryogenesis from in vitro leaves of apple. Acta Agriculturea Nuclestae Sinica. 18（2）:118－120
11. **Da**, **K.**, Zhang, S., Zang, Y., Li, H., Jiao, J. and Wu, L. 2003. Studies on mini-rose tissue culture and pot plant production. Plant tissue culture and virus free plant technology. Chinese Sci. and Tech. Press. Beijing, China. P75-78.
12. **Da**, **K.** and Zhang, S. 2003. Leaf culture, propagation and pot plant production in Lisianthus (Eustoma grandiflorum). J. Shandong Agric. Univ. 34（4）:494－498
13. Zhang, S., **Da**, **K.** and Cao, C. 2003. Agrobacterium tumefaciens-mediated transformation of Chinese chive (Allium tuberosum Rottle) Acta Horticulturae Sinica. 2003, 30(1): 39-42
14. Zhang, S., **Da**, **K.** and Cao, C. 2003. Effects of antibiotics on plant regeneration on Chinese chive (Allium tuberosume Rottle). Acta Agriculturea Nucleatae Sinica. 2003, 17(2): 101-104
15. Zhang, S., **Da**, **K.** and Cao, C. 2002. Efficient plant regeneration via root tip culture on Chinese chive (Allium tuberosume Rottle). Acta Horticulturae Sinica. 29(2): 141-144
16. Zhang, S., **Da**, **K.** and Cao, C. 2002. Rapid micropropagation system via in vitro culture on Amaryllis vittata and its embryogenesis. Acta Horticulturae Sinica. 29(3): 285-287
17. **Da**, **K.** and Zhang, S. 2002. Construction of CpTI gene super expression binary vector and transfer into apple. Proceeding of International Apple Symposium. J. Shandong Agric. Univ. (Suppl): 175-178

18. **Da**, **K.** and Zhang, S. 2002. Study on adventitious shoot regeneretion and micro-propagation from in vitro leaves of Begonia×Elatior. J. Shandong Agric. Univ. 33(1): 93-95
19. Zhang, S., **Da**, **K.,** Wei, Y. and Wen, F. 2002. Shoot regeneration of various genotypes in vitro and optimization of hormone concentration and combination in Chinese cabbage. J. Shandong Agric. Univ. 33(1): 7-13
20. **Da**, **K.** and Zhang, S. 2001. Soamtic embryogenesis from leaves of Begonia Elatior. Acta Horticulturae Sinica. 28(2): 180-181
21. **Da**, **K.**, Cui, D. and Zhang, S. 2001. Transformation of apple using supper expression cowpea trypsin inhibitor (CpTI) gene. Acta Horticulturae Sinica. 28 (1): 57-58
22. **Da**, **K.**, Zhang, S. and Li, Y. 2001. Wounding induced efficient direct somatic embryogenesis in apple leaves. Acta Agriculturea Nucleatae Sinica. 15(5): 290-293
23. **Da**, **K.**, Zhang, S., Li. Y. and Qi, Z. 1996. Direct somatic embryogenesis from in vitro leaves of apple. Acta Horticulturae Sinica. 23(3): 241-245
24. **Da**, **K.**, Zhang, S., Li, Y. and Shu, H. 1996. Somatic embryogenesis from petiole in apple. Acta Agriculturea Nucleatae Sinica. 10(2): 75-78
25. **Da**, **K.**, Li, Y. and Shu, H. 1995. Callus induction and plant regeneration in apple. Acta Agriculturea Nucleatae Sinica. 9(3): 139-142

Oral presentations

1. **Da, K.** and Smith, S. 2016. Fruit bagging for organic and quality fruit production. 2016 ASHS Annual Conference, Aug. 8-11, 2016. Atlanta, GA
2. **Da, K.** and Smith, S. 2016. Oriental lily 'Silk Road' callus culture and plant regeneration. 2016 ASHS Annual Conference, Aug. 8-11, 2016. Atlanta, GA
3. **Da, K.** and Smith, S. 2016. In vitro propagation of ornamental grass 'Bowles Golden' (Carex elata 'Aurea'). 2016 ASHS Annual Conference, Aug. 8-11, 2016. Atlanta, GA
4. **Da, K.,** Smith, S. 2015 Daylily (Hemerocallis) tissue culture and in vitro breeding. ASHS annual conference. Aug. 8–11, New Orleans, Louisiana
5. **Da, K.,** Smith, S. 2015 Rex Begonia tissue culture technology. ASHS annual conference. Aug. 8–11, New Orleans, Louisiana
6. **Da, K.,** Smith, S. and Farish-Williford, H. 2014. Artificial seeds in oriental lily. ASHS annual conference. July 28-31, Orlando, Florida.
7. **Da, K.,** Farish-Williford, H., Smith, S. and Flinn, B. 2013. Adventitious shoot regeneration from Asiatic lily. ASHS annual conference. July 22-25, Palm Desert, California.
8. **Da, K.,** Farish-Williford, H. and Flinn, B. 2011. Plant tissue culture and commercialization in southern Virginia. 5th International symposium on acclimatization and establishment of micropropagated plants. Oct. 19-20, Nebraska city, Nebraska.
9. **Da, K.**, Ni, X., Buntin, D. and Brown, S. 2006.Morphological and physiological response of corn seedlings to brown and southern green stink bug feeding. 70th annual meeting for georgia entomological society. March 29-31, 2006. Jekyll Island, George.
10. **Da**, **K.**, McCurdy, J., May, L., Ozias-Akins, P. and Chee, P. 2006. Development of plant regeneration and transformation protocols for an elite Georgia cotton line. 2006 Beltwide cotton conferences, Jan. 3-6. San Antonio, Texas.
11. **Da**, **K.**, Zhang, S. and Shu, H. 1996. Somatic embroids in apple. 2nd Asia-pacific conference in plant cell tissue and organ culture. Beijing, China.

Posters:

1. **Da, K**. and Smith, S. 2016. An edible lily lanzhou lily tissue culture, regeneration and micropropagation. 2016 ASHS Annual Conference, August 8-11, 2016. Atlanta, GA
2. **Da, K.** and Smith S. 2016. Grafting English cucumber onto a gourd rootstock improves pot cucumber yield and disease resistance in greenhouse. 2016 ASHS Annual Conference, August 8-11, 2016. Atlanta, GA
3. **Da, K.,** Smith, S. and Carey, J. 2015 In vitro propagation of an ornamental grass Miscanthus sinensis 'Strictus'. ASHS annual conference. Aug. 8–11, New Orleans, Louisiana
4. **Da, K.,** Smith, S. and Miller, N. 2015 Random amplified polymorphic DNA (RAPD) analysis of an Easter lily chlorophyll mutant. ASHS annual conference. Aug. 8–11. New Orleans, Louisiana
5. Zhang, S., Carey, J. and **Da, K.** 2015 Micropropagation of two ornamental grasses Schizachyrium scoparium and Sporobolus heterolepis. ASHS annual conference. Aug. 8–11. New Orleans, Louisiana
6. **Da, K.,** Smith, S. and Farish-Williford, H. 2014. Oriental lily tissue culture somatic embryogenesis. ASHS annual conference. July 28-31. Orlando, Florida.
7. **Da, K.,** Smith, S. and Farish-Williford, H. 2014. Pineapple lily (Eucomis) tissue culture and somatic embryogenesis. ASHS annual conference. July 28-31. Orlando, Florida.
8. **Da, K.,** Farish-Williford, H., Smith, S. and Flinn, B. 2013. Artificial seeds in Asiatic lily. ASHS annual conference. July 22-25. Palm Desert, California.
9. **Da, K.,** Farish-Williford, H. and Flinn, B. 2011. Acclimatization of micropropagated iceland poppy "temptress" plantlets. 5th international symposium on acclimatization and establishment of micropropagated plants. Oct. 19-20. Nebraska city, Nebraska.
10. **Da, K.,** Farish-Williford, H. and Flinn, B. 2011. Somatic embryogenesis and plant regeneration from Iceland poppy "Temptress". 2011 In vitro biology meeting. June 4-8. Raleigh, North Carolina.
11. **Da, K.,** Iqbal, M.J., Nowark, J. and Flinn, B. 2010. Potato DNA methylation and gene transcipt changes associated with a beneficial bacterial endophyte interaction. Plant Biologe 2010, Joint annual meeting of the American society of plant biologists & the Canadian society of plant physiologists - La société canadienne de physiologie végétale, July 31 – August 4. Montreal, Canada.
12. Rumen Conev, Lisa Lipsey, Jeffrey Miller, Frederic Duis, Linda Pinkham, John Wise, Douglas Hensel, William McCalleb, Gregory Eaton, Richard Baker, Barry Flinn, Zhiwu Li, Yinghui Dan, M. Javed Iqbal, **K**edong **Da**, O'Neil Brian, and Jerzy Nowak. 2009. Strategies for Evaluation and Introduction of Ornamental Germplasm in Virginia. HortScience June 2009 vol. 44 (3)555-581
13. Ni, X., **Da, K.,** Buntin, G., Cottrell, T.E., Tillman, P.G., Olson, D.M.and Krakowsky, M.D. 2008. Economic injury level of brown stink bug damage on developing corn ears. Georgia entomological society annual meeting, April 2-4. Cordele, Georgia.
14. Ni, X., **Da, K.,** Gunawan, G., Buntin, D. and Brown, S.L. 2008. Physiological and biochemical bases of fall armyworm resistance in the seedlings of maize inbred lines. southeastern branch of the entomological society of america annual meeting, March 2-5. Jacksonville, Florida
15. Ni, X., **Da, K**., Buntin, D., Cottrell, T.E., Gunawan, G., Krakowsky, M.D., Powell, R., Tillman, P.G., Olson, D.M., Mcpherson, R., Wilson, J.P., Lee, D. and Coy, A.

2007. Seasonal population dynamics and kernel damage of the brown stink bug (Heteroptera: Pentatomidae) in corn. In: Proceedings of the georgia entomological society annual meeting, May 16-17. Athens, Georgia. P-14

16. **Da, K.**, Ozias-Akins, P., McCurdy J. and Chee P. W. 2007. Temporal and spatial expression of GFP gene in transgenic cotton. 2007 Beltwide cotton conferences, Jan. 9-12. New Orleans, Louisiana
17. **Da, K.**, Ozias-Akins, P. and Chee P. W. 2006. A Single-Cell-Based Genetic Transformation System in Cotton. 2006 ICGI Research Conference, Sept. 18-20, 2006, Brasilia DF, Brazil.