

# CURRICULUM VITAE

QIFA ZHANG

National Key laboratory of Crop Genetic Improvement  
Huazhong Agricultural University  
Wuhan 430070, China  
Phone: 86-27-87282429/Fax: 86-27-87287092  
Email: qifazh@mail.hzau.edu.cn

**Sex:** Male

**Date and Place of Birth:** December 19, 1953; Hubei, China.

## **Education:**

B. S. Agronomy, August 1976, Huazhong Agricultural College, China.

Ph. D. Genetics, June 1985, University of California, Davis, California, USA.

Post-doctoral fellow, July, 1985--July, 1986, University of California, Davis, California, USA.

## **Current research interests:**

The major interest is rice genomics and genetic improvement. The research areas include functional genomics, biotechnology, and molecular and genetic basis of male sterility, intersubspecific hybrid sterility and heterosis.

## **Positions held:**

1976-1982 Assistant teacher, Huazhong Agricultural College.  
1986 Lecturer, Huazhong Agricultural University.  
1987 Associate professor, Huazhong Agricultural University.  
1987-1994 Director, Biotechnology Center, Huazhong Agricultural University.  
1991 Professor, Huazhong Agricultural University.  
1992-1999 Associate Director, National Key Laboratory of Crop Genetic Improvement at Huazhong Agricultural University.  
1994-1998 Adjunct Professor, Virginia Polytechnic Institute and State University, USA.  
1994-2013 Dean, College of Life Science and Technology, Huazhong Agricultural University.  
1998-2001 Guest Professor, China Agricultural University, Beijing.  
1999- Director, National Key Laboratory of Crop Genetic Improvement.  
2002- Director, National Center of Crop Molecular Breeding.  
2002- Director, National Center of Plant Gene Research (Wuhan).

### **Services in scientific committees:**

- 1990-1995 Member, Science and Technology Advisory Committee of Hubei Province.  
1991-1994 Member, Expert Committee of The China National Program on Plant and Animal Biotechnology.  
1992-1995 Member, Scientific Board of The China Rice Genome Project.  
1992-1995 Member, Biotechnology Advisory Committee, Ministry of Agriculture, China.  
1993-2001 Member, Oversight Committee of McKnight Foundation's International Programs in Plant Biology.  
1995-1999 Member, Science Advisory Committee of the Rockefeller Foundation's International Program on Rice Biotechnology.  
1996-2000 Member, Steering Committee of the Asian Rice Biotechnology Network.  
1996-1998 Panel member, Life Science, National Natural Science Foundation of China.  
1997-1998 Member, Expert Committee of Biotechnology, Consultative Group for International Agricultural Research (CGIAR).  
1997- Chair, Group of Basic Biology, Oversight Committee of Higher Agricultural Education in China.  
1997-2006 Chair, Biology Group II, the Academic Degree Committee of State Council of PRC.  
1998-2000 Member, Consultative Group, Life Science, National Natural Science Foundation of China.  
1999-2000 Chairman, Steering Committee of the Asian Rice Biotechnology Network.  
1998-2003 Member, Committee of Science and Technology, the Ministry of Agriculture of PRC.  
2002- Chairman, the Oversight Committee, The National Base for Training of Talents in Biological Sciences and Technology, the Ministry of Education of China.  
2003- Member, Committee for TWAS Prize in Agricultural Sciences.  
2005- Scientific Advisor, International Foundation for Sciences, Sweden.  
2006- Member, Project Advisory Committee of HarvstPlus.  
2011-2012 Member, Advisory Committee, National Program on Basic Research.

### **Services in editorial boards**

Journal of Huazhong Agricultural University  
Euphytica (1995-2003)  
Journal of Agricultural Biotechnology  
Acta Botanica Sinica (Advisory Board)  
Acta Genetica Sinica (Advisory Board)  
Acta Agronomica Sinica (1995-)  
Plant Breeding (2000-2005)  
Theoretical and Applied Genetics (2001-2016)  
Science in China (2003-2008)  
Plant Physiology and Biochemistry (Advisory Board, 2001-)  
Current Opinion in Plant Biology (2008-)  
BMC Genomics (2008-2012)  
Molecular Plant (2008-, advisory board)  
Rice (2008-, advisory board)  
Annual Review of Plant Biology (2011-2015)

Plant Biotechnology Journal (2012-2014)

### **Organization of scientific conferences**

Chairman, Plant Genomics in China I- (an annual meeting series starting 2000)  
Chairman, International Symposium on Genomics and Crop Genetic Improvement (meeting series) (Wuhan, 2002, 2010)  
Chairman, First International Symposium on Rice Functional Genomics (Shanghai, 2003)  
Chairman, 13th International Symposium on Rice Functional Genomics (Wuhan, 2015)  
President, 11<sup>th</sup> International Congress of Plant Molecular Biology (Iguazu, Brazil, 2015)

### **Grant review and panels**

National Science Foundation (USA)  
Deutsche Forschungsgemeinschaft (DFG)  
Israel Science Foundation  
International Foundation for Science (Sweden)  
Netherlands Organization for Scientific research (ALW)

### **Honors and awards:**

- 1987 Award for reformation of teaching materials and methods, Huazhong Agricultural University.
- 1988 Award for quality teaching, Huazhong Agricultural University.
- 1988 New Stars in Science and Technology named by Association of Science and Technology, Wuhan, China.
- 1989 Award for quality teaching, Huazhong Agricultural University.  
Best Young Scientists in Hubei Province named by Hubei Provincial Government, China.
- 1990 Biotechnology Career Fellowship Award, The Rockefeller Foundation.
- 1991 Award for Outstanding Contributions to Higher Education in China, the State Council of PRC.
- 1992 Outstanding Scientist, awarded by the Ministry of Agriculture of PRC.
- 1993 King Baudouin Prize, awarded by the International Foundation for Science, Sweden.
- 1994 Outstanding Scientist, awarded by the Ministry of Personnel of PRC.
- 1995 Distinguished Young Investigator Award, by Chinese National Natural Science Foundation.
- 1996 A Prize for Significant Contributions to the National High Technology Research Program, awarded by the Commission of Science and Technology of PRC.
- 1997 Superior Returning Scientist from Overseas, awarded jointly by the Ministry of Personnel and Education Commission of PRC.
- 1997 Award for Significant Contributions to Agricultural Science in China, by the China Foundation for Agricultural Science and Education.
- 1998 Young Scientist of China, awarded jointly by the Central Committee of Chinese Youth League, the Organizing Department of the Central Committee of the Chinese Communist Party, the Ministry of Personnel and the Ministry of Science and Technology.
- 1999 Cheung Kong Professor, awarded by the Cheung Kong Scholars Program, The Ministry of Education, PRC.

- 1999 Election as a Academician, the Chinese Academy of Sciences.
- 2000 Election as a Fellow, the Third World Academy of Sciences.
- 2002 First Award in Natural Science, Hubei Provincial Government.
- 2003 First Award in Natural Science, Hubei Provincial Government.
- 2003 Award for Advancement in Science and Technology, Ho Leung Ho Lee Foundation (Hong Kong).
- 2005 Cal Aggie Alumni Association Emil M. International Award, University of California, Davis.
- 2007 Election as a Foreign Associate, The National Academy of Sciences, USA.
- 2007 First Award in Natural Science, Hubei Provincial Government.
- 2008 Distinguished Career Award in Science and Technology, Hubei Provincial Government.
- 2012 Outstanding Scientist Award, International Society of Crop Science.
- 2015 First Award in Natural Science, Hubei Provincial Government.

### **Membership in Academic Societies**

China Association of Science and Technology (Vice Chairman, 2001-2011)  
 China Association of Agricultural Science Societies (Vice President, 2002-)  
 Genetics Society of China (Vice President, 2002-2010)  
 Agro-Biotechnology Society of China  
 Chinese Society of Botany  
 Chinese Society of Bioengineering

American Society of Plant Biologists  
 International Plant Molecular Biology Society (President elect, Board of Directors, 2012-2015; President 2015-2018)  
 International Rice Genetics Cooperative (Member of Standing Committee)

### **Publications in refereed journals**

1. Yu YJ, Zhang Q (1978) A preliminary study on the combining ability of six parents with diallel crosses in wheat. *Acta Genetica Sinica* 5:281-292 (in Chinese with English Abstract).
2. Zhang Q, Allard RW (1986) Sampling variance of the genetic diversity index. *J Heredity* 77:54-55.
3. Zhang Q, Geng S (1986) A method of estimating varietal stability for data of long-term trials. *Theor Appl Genet* 71:810-814.
4. Geng S, Zhang Q, Bassett DM (1987) Stability of yield and fiber quality of California cotton. *Crop Science* 27:1004-1010.
5. Zhang Q, Webster RK, Allard RW (1987) Geographical distribution and associations of resistance to four races of *Rhynchosporium secalis*. *Phytopathology* 77:352-357.
6. Zhang Q, Tibayrenc M, Ayala FJ (1988) Linkage disequilibrium in natural populations of *Trypanosoma cruzi* (Flagellate), the agent of Chagas' disease. *J Protozool* 35:81-85.
7. Neale DB, Saghai-Marooif MA, Allard RW, Zhang Q, Jorgensen RA (1988) Chloroplast DNA diversity in population of wild and cultivated barley. *Genetics* 120:1105-1110.
8. Jana S, Zhang Q, Saghai-Marooif MA (1989) Influence of environments on the development of multivariate structure in a barley composite cross at three locations. *Genome* 32:40-45.
9. Dai X, Zhang Q (1989) Genetic diversity of six isozyme loci in cultivated barley of Tibet. *Theor Appl Genet* 78:281-286.
10. Chen M, Zhang Q, Liao Y (1989) Similarity of genetic background between barley isogenic lines carrying various genes for powdery mildew resistance as determined by analyzing seven

- quantitative characters. Journal of Huazhong Agricultural University 8:311-31 (in Chinese with English Abstract).
11. Yang G, Zhang Q (1990) Construction of a cDNA library from germinated barley seed and isolation of an  $\alpha$ -amylase gene. Journal of Huazhong Agricultural University 9:315-318.
  12. Yang G, Zhang Q (1990) Polymorphism of  $\alpha$ -amylase activity in landraces and cultivars of barley from China. Euphytica 48:245-251.
  13. Zhang Q, Saghai Maroof MA, Allard RW (1990) Worldwide pattern of multilocus structure in barley determined by discrete log-linear multivariate analyses. Theor Appl Genet 80:121-128.
  14. Allard RW, Saghai-Marooof MA, Zhang Q, Jorgensen RA (1990) Genetic and molecular organization of ribosomal DNA (rDNA) variants in wild and cultivated barley. Genetics 126:743-751.
  15. Saghai Maroof, MA, Allard RW, Zhang Q (1990) Genetic diversity and ecogeographical differentiation among ribosomal DNA (rDNA) alleles in wild and cultivated barley. Proc Natl Acad Sci USA 87:8486-8490.
  16. Zhang Q, Saghai Maroof MA, Allard RW (1990) Effects on adaptedness of variations in ribosomal DNA copy number in populations of wild barley *Hordeum vulgare* ssp. *spontaneum* Koch. Proc Natl Acad Sci USA 87:8741-8745.
  17. Zhang Q, Saghai Maroof MA, Webster RK (1991) Spatial and temporal patterns of associations between quantitative characters and resistance to scald in barley. Hereditas 115:1-8.
  18. Liao Y, Zhang Q, Zheng Y (1991) Two-dimensional electrophoresis of proteins associated with powdery mildew infection in barley isogenic lines. Acta Genetica Sinica 18:431-436.
  19. Zhang Q, Saghai Maroof MA, Lu TY, Shen BZ (1992) Genetic diversity and differentiation of indica and japonica rice detected by RFLP analysis. Theor Appl Genet 83:495-499.
  20. Saghai Maroof MA, Zhang Q, Neale DB, Allard RW (1992) Associations between nuclear loci and chloroplast DNA genotypes in wild barley. Genetics 131:225-231.
  21. Zhang Q, Saghai Maroof MA, Yang GP (1992) Ribosomal DNA spacer-length polymorphisms and the Oriental-Occidental differentiation in cultivated barley. Theor Appl Genet 84:682-687.
  22. Zhang Q, Webster RK, Crandall BA, Jackson LF, Saghai Maroof MA (1992) Race composition and pathogenicity associations of *Rhynchosporium secalis* in California. Phytopathology 82:798-803.
  23. Zhang Q, Duan G, Yang G (1992) Restriction fragment length polymorphism of chloroplast DNA and rDNA intergenic spacer region in barley from China. Chinese Journal of Genetics 19:111-118, Allerton Press, Inc., New York.
  24. Zhang Q, Dai X, Saghai Maroof MA (1992) Comparative assessment of isozyme diversity in barley from Ethiopia and Tibet. Chinese Journal of Genetics 19:119-126, Allerton Press, Inc., New York.
  25. Liu A, Li H, Zhang Q, Shi S, Jiang X, Yang G (1992) Mapping a wide compatibility gene in rice in relation to RFLP markers. Journal of Huazhong Agricultural University 11:213-219.
  26. 曹孟良, 郑用璉, 张启发 (1992) **光敏核不育水稻农垦 58S 与农垦 58 蛋白质双向电泳对比分析**. 华中农业大学学报 11:305-311.
  27. Saghai Maroof MA, Zhang Q (1992) Interrelationships of allozymes and ribosomal DNA alleles in wild barley. Euphytica 61:113-122.
  28. Allard RW, Zhang Q, Saghai Maroof MA, Muona OA (1992) Evolution of multilocus genetic structure in an experimental barley population. Genetics 131:957-969.
  29. Liu A, Zhang Q, Li H (1992) Location of a gene for wide-compatibility in the RFLP linkage map. Rice Genetics Newsletter 9:134-136.
  30. Zhang Q, Jana S, Saghai Maroof MA (1993) A diagnostic analysis of genetic differentiation among subpopulations of a barley composite cross using isozyme markers. Hereditas 118:63-70.
  31. Zhang Q, Saghai Maroof MA, Kleinhofs A (1993) Comparative diversity analysis of RFLPs and isozymes within and among populations of *Hordeum vulgare* ssp. *spontaneum*. Genetics 134:909-916.
  32. Zhang Q, Shen B, Dai X, Mei M, Saghai Maroof MA, Li Z (1993) An RFLP-based genetic analysis of photoperiod sensitive male sterility in rice. Rice Genetics Newsletter 10:94-97.
  33. Zhang Q, Gao YJ, Yang SH, Ragab RA, Saghai Maroof MA, Li ZB (1994) A diallel analysis of heterosis in elite hybrid rice based on RFLPs and microsatellites. Theor Appl Genet 89:185-192.

34. Saghai Maroof MA, Biyashev RM, Yang GP, Zhang Q, Allard RW (1994) Extraordinarily polymorphic microsatellite DNA in barley: species diversity, chromosomal location, and population dynamics. *Proc Natl Acad Sci USA* 91:5466-5470.
35. Saghai Maroof MA, Zhang Q, Biyashev RM (1994) Molecular marker analysis of powdery mildew resistance in barley. *Theor Appl Genet* 88:733-740.
36. Zhang Q, Yang GP, Dai XK, Sun JZ (1994) A comparative analysis of genetic polymorphism in wild and cultivated barley from Tibet using isozyme and ribosomal DNA markers. *Genome* 37:631-638.
37. Zhang Q, Shen BZ, Dai XK, Mei MH, Saghai Maroof MA, Li ZB (1994) Using bulked extremes and recessive class to map genes for photoperiod sensitive genic male sterility in rice. *Proc Natl Acad Sci USA* 91:8675-8679.
38. Yang GP, Saghai Maroof MA, Xu CG, Zhang Q, Biyashev RM (1994) Comparative analysis of microsatellite DNA polymorphism in landraces and cultivars of rice. *Mol. Gen. Genet.* 245:187-194.
39. Saghai Maroof MA, Zhang Q, Chojek J I (1994) RFLPs in cultivated barley and their application in evaluation of malting quality cultivars. *Hereditas* 121:21-29.
40. Zhang Q, Gao YJ, Saghai Maroof MA, Yang SH, Li JX (1995) Molecular divergence and hybrid performance in rice. *Molecular Breeding* 1:133-142.
41. Saghai Maroof MA, Zhang Q, Biyashev R (1995) Comparison of restriction fragment length polymorphisms (RFLPs) in wild and cultivated barley. *Genome* 38:298-306.
42. Liu KD, Zhang Q, Zhang DP, Xie Y (1995) Genetic variation and indica-japonica differentiation in Yunnan indigenous rice. *Acta Bot Sin* 37:718-724.
43. Saghai Maroof MA, Yang GP, Biyashev R, Maughan PJ, Zhang Q (1996) Analysis of barley and rice genomes by comparative RFLP linkage mapping. *Theor Appl Genet* 92:541-551.
44. Liu KD, Zhou ZQ, Xu CG, Zhang Q, Saghai Maroof MA (1996) An analysis of hybrid sterility in rice using a diallel cross of 21 parents involving indica, japonica and wide compatibility varieties. *Euphytica* 90:275-280.
45. Zhang Q, Zhou ZQ, Yang GP, Xu CG, Liu KD, Saghai Maroof MA (1996) Molecular marker heterozygosity and hybrid performance in indica and japonica rice. *Theor Appl Genet* 93: 1218-1224.
46. Liu KD, Yang GP, Zhu SH, Zhang Q, Wang XM, Saghai Maroof MA (1996) Extraordinarily polymorphic ribosomal DNA in wild and cultivated rice. *Genome* 39:1109-1116.
47. Lin XH, Zhang DP, Xie YF, Gao HP, Q Zhang (1996) Identifying and mapping a new gene for bacterial blight resistance in rice based on RFLP markers. *Phytopathology* 86:1156-1169.
48. Li C, Zhou C, Yang H, Li X, Zhang Q (1996) Development and molecular identification of pollen-somatic hybrid plants in *Brassica* spp. *Chinese Science Bulletin* 41:1564-1567.
49. Li C, Zhou C, Yang H, Li X, Zhang Q (1996) Studies on pollen-somatic protoplast fusion between *Brassica chinensis* and *B. juncea*. *J. Wuhan Botanical Research* 14:289-293.
50. Li HB, Zhang Q, Liu AM, Zou JS, Chen ZM (1996) A genetic analysis of low-temperature-sensitive sterility in indica-japonica rice hybrids. *Plant Breeding* 115:305-309.
51. Saghai Maroof MA, Yang GP, Zhang Q, Gravois KA (1997) Correlation between molecular marker distance and hybrid performance in U.S. Southern long grain rice. *Crop Science* 37:145-150.
52. Zhang Q, Liu KD, Yang GP, Saghai Maroof MA, Xu CG, Zhou ZQ (1997) Molecular marker diversity and hybrid sterility in indica-japonica rice crosses. *Theor Appl Genet* 95:112-118.
53. Wang S, Zhang Q, Maughan PJ, Saghai Maroof MA (1997) Copia-like retrotransposons in rice: heterogeneity, diversity and chromosomal locations. *Plant Molecular Biology* 33:1051-1058.
54. Liu KD, Wang J, Li HB, Xu CG, Liu AM, Li XH, Zhang Q (1997) A genome-wide analysis of wide compatibility in rice and the precise location of the *S<sub>5</sub>* locus in the molecular map. *Theor Appl Genet* 95:809-814.
55. Yu SB, Li JX, Xu CG, Tan YF, Gao YJ, Li XH, Zhang Q, Saghai Maroof MA (1997) Importance of epistasis as the genetic basis of heterosis in an elite rice hybrid. *Proc Natl Acad Sci USA* 94:9226-9231.
56. Yao FY, Xu CG, Yu SB, Li JX, Gao YJ, Li XH, Zhang Q (1997) Mapping and genetic analysis of two fertility restorer loci in the wild-abortive cytoplasmic male sterility system of rice. *Euphytica* 98:183-187.

57. Li HB, Wang J, Liu AM, Liu KD, Zhang Q, Zou JS (1997) Genetic basis of low-temperature-sensitive sterility in indica-japonica hybrids of rice as determined by RFLP analysis. *Theor Appl Genet* 95:1092-1097.
58. Wang FP, Mei MH, Xu CG, Zhang Q (1997) *pms1* genomic region does not cause fertility difference between the photoperiod-sensitive male sterile rice Nongken 58S and normal Nongken 58. *Acta Bot Sin* 39:922-925.
59. Xiong LZ, Liu KD, Dai XK, Wang SW, Zhang DP, Saghai Maroof MA, Sasaki T, Zhang Q (1997) A high density RFLP map based on the F<sub>2</sub> population of a cross between *Oryza sativa* and *O. rufipogon* using Cornell and RGP markers. *Rice Genetic Newsletter* 14:110-116.
60. Wang S, Liu KD, Wang J, Zhang Q (1998) Identifying candidate disease resistance genes in rice by sequence homology and chromosomal locations. *Acta Bot Sin* 40:42-50.
61. Xiong LZ, Yang GP, Xu CG, Zhang Q, Saghai Maroof MA (1998) Relationships of differential gene expression in leaves with heterosis and heterozygosity in a rice diallel cross. *Molecular Breeding* 4:129-136.
62. Yu SB, Li JX, Xu CG, Tan YF, Gao YJ, Li XH, Zhang Q, Saghai Maroof MA (1998) Epistasis plays an important role as the genetic basis of heterosis in rice. *Science in China (Ser. C)* 41:293-302.
63. Wang S, Zhang Q (1998) Retrotransposons in the genomes of higher plants. *Acta Bot Sin* 40:291-297.
64. Xiong L, Wang S, Liu K, Dai X, Saghai Maroof MA, Hu J, Zhang Q (1998) Distribution of simple sequence repeat and AFLP markers in molecular linkage map of rice. *Acta Bot Sin* 40:605-614.
65. Wang J, Liu KD, Xu CG, Li XH, Zhang Q (1998) The high level of wide-compatibility of 'Dular' has a complex genetic basis. *Theor Appl Genet* 97:407-412.
66. Tu J, Ona I, Zhang Q, Mew TW, Khush GS, Datta SK (1998) Transgenic rice variety 'IR72' with Xa21 is resistant to bacterial blight. *Theor Appl Genet* 97:31-36.
67. Peng KM, Zhang HB, Zhang Q (1998) A BAC library constructed to the rice cultivar "Minghui 63" for cloning genes of agronomic importance. *Acta Bot Sin* 40:1108-1114.
68. Zhu S, Zhang Q, Wang M (1998) Ribosomal DNA polymorphisms of the common wild rice from China. *Acta Genetica Sinica* 25:531-537.
69. Xiong LZ, Liu KD, Dai XK, Xu CG, Zhang Q (1999) Identification of genetic factors controlling domestication-related traits of rice using an F<sub>2</sub> population of a cross between *Oryza sativa* and *O. rufipogon*. *Theor Appl Genet* 98:243-251.
70. Xiong LZ, Xu CG, Saghai Maroof MA, Zhang Q (1999) Patterns of cytosine methylation in an elite rice hybrid and its parental lines detected by a methylation-sensitive amplification polymorphism technique. *Mol Gen Genet* 261: 439-446.
71. Peng K, Zhang Q (1999) A cosmid library constructed to the elite rice cultivar "Minghui 63". *Acta Bot Sin* 41:337-339.
72. Zhao MF, Li XH, Yang JB, Xu CG, Hu RY, Liu DJ, Zhang Q (1999) Relationship between molecular marker heterozygosity and hybrid performance in intra- and inter-subspecific crosses of rice. *Plant Breeding* 118:139-144.
73. Wang S, Liu N, Peng K, Zhang Q (1999) The distribution and copy number of *copia*-like retrotransposons in rice (*Oryza sativa* L.) and their implications in the organization and evolution of the rice genome. *Proc Natl Acad Sci USA* 96:6824-6828.
74. Tan YF, Li JX, Yu SB, Xing YZ, Xu CG, Zhang Q (1999) The three important traits for cooking and eating quality of rice grains are controlled by a single locus in an elite rice hybrid, Shanyou 63. *Theor Appl Genet* 99:642-648.
75. He YQ, Yang J, Xu CG, Zhang Z, Zhang Q (1999) Genetic bases of instability of male sterility and fertility reversibility in photoperiod-sensitive genic male sterile rice. *Theor Appl Genet* 99:683-693.
76. Mei MX, Dai XK, Xu CG, Zhang Q (1999) Mapping and genetic analysis of the genes for photoperiod-sensitive male sterility in rice using the original mutant Nongken 58S. *Crop Science* 19:1711-1715.
77. Mei M, Chen L, Zhang ZH, Li ZY, Xu CG, Zhang Q (1999) *pms3* is the locus causing the original photoperiod-sensitive male sterility mutation of 'Nongken 58S'. *Science in China (series C)* 42:316-322.

78. Wang S, Wang J, Jiang J, Zhang Q (2000) Mapping of centromeric regions on the molecular linkage map of rice (*Oryza sativa* L.) using centromere-associated sequences. *Mol Gen Genet* 263:165-172.
79. Chen S, Lin XH, Xu CG, Zhang Q (2000) Improvement of bacterial blight resistance of 'Minghui 63', an elite restorer line of hybrid rice, by molecular marker-assisted selection. *Crop Science* 239-244.
80. Chen S, Zhang Q (2000) Improvement of bacterial blight resistance of hybrid rice by molecular marker-assisted selection. *J Huazhong Agric Univ* 19:183-189.
81. Li JX, Yu SB, Xu CG, Tan YF, Gao YJ, Li XH, Zhang Q (2000) Analyzing quantitative trait loci for yield using a vegetatively replicated F<sub>2</sub> population from a cross between the parents of an elite rice hybrid. *Theor Appl Genet* 101:248-254.
82. Tu J, Datta K, Khush GS, Zhang Q, Datta SK (2000) Field performance of *Xa21* transgenic indica rice (*Oryza sativa* L.), IR72. *Theor Appl Genet.* 101:15-20.
83. Chen S, Zhang Q (2000) Molecular marker-assisted selection for improving bacterial blight resistance of hybrid rice. *Scientific Agriculture (Taiwan)* 48:111-119.
84. Tan YF, Xing YZ, Li JX, Yu SB, Xu CG, Zhang Q (2000) Genetic bases of appearance quality of rice grains in Shanyou 63, an elite rice hybrid. *Theor Appl Genet* 101:823-829.
85. Tu J, Zhang G, Datta K, Xu C, He Y, Zhang Q, Khush GS, Datta SK (2000) Field performance of transgenic elite commercial hybrid rice expressing *Bacillus thuringiensis*  $\delta$ -endotoxin. *Nature Biotechnology* 18:1101-1104.
86. Wang S, Liu K, Zhang Q (2000) Segmental duplications are common in the rice (*Oryza sativa* L.) genome. *Acta Bot Sin* 42:1150-1155.
87. Huang Z, He G, Shu L, Li X, Zhang Q (2001) Identification and mapping of two brown planthopper resistance genes in rice. *Theor Appl Genet* 102:929-934.
88. Chen S, Xu CG, Lin XH, Zhang Q (2001) Improving bacterial blight resistance of '6078', an elite restorer line of hybrid rice, by molecular marker-assisted selection. *Plant Breeding* 120:133-137.
89. Tan YF, Zhang Q (2001) Correlation of SSR variants in the leader sequence of the *Waxy* gene with amylose content of the grain in rice. *Acta Bot Sin* 43:146-150.
90. Li X, Lu Q, Wang F, Xu C, Zhang Q (2001) Separation of the two-locus inheritance of photoperiod sensitive genic male sterility in rice and precise mapping the *pms3* locus. *Euphytica* 119:343-348
91. Chen HL, Chen BT, Zhang DP, Xie YF, Zhang Q (2001) Pathotypes of *Pyricularia grisea* in rice fields of central and southern China. *Plant Disease* 85:843-850.
92. Liu N, Shan Y, Wang FP, Xu CG, Peng KM, Li XH, Zhang Q (2001) Identification of an 85 kb DNA fragment containing *pms1*, a locus for photoperiod-sensitive genic male sterility in rice. *Mol Genet Genomics* 266:271-275.
93. Tan YF, M Sun, Xing, YZ, Hua JP, Sun XL, Zhang QF, Corke H (2001) Mapping quantitative trait loci for milling quality, protein content and color characteristics of rice using a recombinant inbred line population derived from an elite rice hybrid. *Theor Appl Genet* 103:1037-1045.
94. Yu SB, Li JX, Xu CG, Tan YF, Li XH, Zhang Q (2002) Identification of quantitative trait loci and epistatic interactions for plant height and heading date in rice. *Theor Appl Genet* 104:619-625.
95. Chen HL, Wang S, Zhang Q (2002) New gene for bacterial blight resistance in rice located on chromosome 12 identified from Minghui 63, an elite restorer line. *Phytopathology* 92:750-754.
96. Xing YZ, Tan YF, Hua JP, Sun XL, Xu CG, Zhang Q (2002) Characterization of the main effects, epistatic effects and their environmental interactions of QTLs in the genetic basis of yield traits in rice. *Theor Appl Genet* 105:248-257.
97. Han YP, Xing YZ, Chen ZX, Gu SL, Pan XB, Chen XL, Zhang Q (2002) Mapping QTLs for horizontal resistance to sheath blight in an elite rice restorer line, Minghui 63. *Acta Genetica Sinica* 29:622-626.
98. Zhou B, Peng K, Chu Z, Wang S, Zhang Q (2002) The defense responsive genes showing enhanced and repressed expression after pathogen infection in rice (*Oryza sativa* L.). *Science in China* 45:449-467.
99. Xiong M, Wang S, Zhang Q (2002) Coincidence in map positions between pathogen-induced defense-responsive genes and quantitative resistance loci in rice. *Science in China* 45:518-526.



100. Li R, Zhang Z, Zhang Q (2002) Transformation of japonica rice with *RHL* gene and salt tolerance of the transgenic rice plant. *Chin Scie Bull* 47:998-1002.
101. Cui KH, Peng SB, Xing YZ, Xu CG, Yu SB, Zhang Q (2002) Molecular dissection of seedling vigor and associated physiological traits in rice. *Theor Appl Genet* 105:745-753.
102. Hua JP, Xing YZ, Xu CG, Sun XL, Yu SB, Zhang Q (2002) Genetic dissection of an elite rice hybrid revealed that heterozygotes are not always advantageous for performance. *Genetics* 162:1885-1895.
103. McCouch SR, Teytelman L, Xu Y, Lobos KB, Clare K, Walton M, Fu B, Maghirang R, Li Z, Xing Y, Zhang Q, Kono I, Yano M, Fjellstrom R, DeClerck G, Schneider D, Cartinhour S, Ware D, Stein L (2002) Development and mapping of 2240 new SSR markers for rice (*Oryza sativa* L.). *DNA Res* 9:199-207.
104. Zhou PH, Tan YF, He YQ, Xu CG, Zhang Q (2003) Simultaneous improvement for four quality traits of Zhenshan 97, an elite parent of hybrid rice, by molecular marker-assisted selection. *Theor Appl Genet* 106:326-331.
105. Cui KH, Peng SB, Xing YZ, Xu CG, Yu SB, Zhang Q (2003) Molecular dissection of the genetic relationships of source, sink and transport tissue with yield traits in rice. *Theor Appl Genet* 106:649-658.
106. Chen H, Wang S, Xing Y, Xu C, Hayes PM, Zhang Q (2003) Comparative analyses of genomic locations and race specificities of loci for quantitative resistance to *Pyricularia grisea* in rice and barley. *Proc Natl Acad Sci USA* 100:2544-2549.
107. Hua J, Xing Y, Wu W, Xu C, Sun X, Yu S, Zhang Q (2003) Single-locus heterotic effects and dominance by dominance interactions can adequately explain the genetic basis of heterosis in an elite rice hybrid. *Proc Natl Acad Sci USA* 100:2574-2579.
108. Sun X, Yang Z, Wang S, Zhang Q (2003) Identification of a 47-kb DNA fragment containing *Xa4*, a locus for bacterial blight resistance in rice. *Theor Appl Genet* 106:683-687.
109. Guan JC, Li XH, Zhang QF, Kochert G, Lin CY (2003) Characterization of a unique genomic clone located 5'upstream of the *Oshsp16.9B* gene on chromosome 1 in rice (*Oryza sativa* L. cv Tainung No. 67). *Theor Appl Genet* 106:503-511.
110. Yang Z, Sun X, Wang S, Zhang Q (2003) Genetic and physical mapping of a new gene for bacterial blight resistance in rice. *Theor Appl Genet* 106:1467-1472.
111. Wu C, Li XJ, Yuan WY, Chen GX, Kilian A, Li J, Xu C, Li XH, Zhou DX, Wang S, Zhang Q (2003) Development of enhancer trap lines for functional analysis of the rice genome. *Plant J* 35:418-427.
112. Tu J, Datta K, Oliva N, Zhang G, Xu C, Khush GS, Zhang Q, Datta SK (2003) Site-independently integrated transgenes in the elite restorer rice line Minghui 63 allow removal of a selectable marker from the gene of interest by self-segregation. *Plant Biotechnol J* 1:155-165.
113. Sun X, Cao Y, Yang Z, Xu C, Li X, Wang S, Zhang Q (2004) *Xa26*, a gene conferring resistance to *Xanthomonas oryzae* pv. *oryzae* in rice, encodes a LRR receptor kinase-like protein. *Plant J* 37:517-527.
114. Li X, Xu C, Zhang Q (2004) Ribosomal DNA spacer-length polymorphisms in three samples of wild and cultivated barley. *Plant Breeding* 123:30-34.
115. Jiang GH, He YQ, Xu CG, Li XH, Zhang Q (2004) The genetic basis of stay-green in rice analyzed in a population of doubled haploid lines derived from an *indica* by *japonica* cross. *Theor Appl Genet* 108:688-698.
116. Liu HY, Xu CG, Zhang Q (2004) Male and female gamete abortions, and reduced affinity between the uniting gametes as the causes for sterility in an *indica*/*japonica* hybrid in rice. *Sex Plant Reprod.* 17:55-62.
117. Hirochika H, Guiderdoni E, An G, Hsing Y, Eun MY, Han C, Upadhyaya N, Ramachandran S, Zhang Q, Pereira A, Sundaresan V, Leung H (2004) Rice mutant resources for gene discovery. *Plant Mol Biol* 54:325-334.
118. Jiang GH, Xu CG, Tu JM, Li XH, He YQ, Zhang Q (2004) Pyramiding of insect- and disease-resistance genes into an elite *indica*, cytoplasm male sterile restorer line of rice, 'Minghui 63'. *Plant Breeding* 123:112-116.
119. Xie K, Zhang J, Xiang Y, Feng Q, Han B, Chu Z, Wang S, Zhang Q, Xiong L (2005) Isolation and annotation of 10,828 putative full length cDNAs from *indica* rice. *Science in China (ser C)* 35:6-12.

120. Lin YJ, Zhang Q (2005) Optimizing the tissue culture conditions for high efficiency transformation of indica rice. *Plant Cell Rep* 23:540-547.
121. Song X, Qiu SQ, Xu CG, Li XH, Zhang Q (2005) Genetic dissection of embryo-sac fertility, pollen fertility and their contributions to spikelet fertility of inter-subspecific hybrids in rice. *Theor Appl Genet* 110:205-211.
122. Zhang J, Feng Q, Jin C, Qiu D, Zhang L, Xie K, Yuan D, Han B, Zhang Q, Wang S (2005) Features of the expressed sequences revealed by a large-scale analysis of ESTs from a normalized cDNA library of the elite indica rice cultivar Minghui 63. *Plant J* 42:772-780.
123. Fan CC, Yu XQ, Xing YZ, Xu CG, Luo LJ, Zhang Q (2005) The main effects, epistatic effects and environmental interactions of QTLs on the cooking and eating quality of rice in a doubled-haploid line population. *Theor Appl Genet* 110: 1445-1452.
124. Wang GW, He YQ, Xu CG, Zhang Q (2005) Identification and confirmation of three neutral alleles conferring wide-compatibility in inter-subspecific hybrids of rice (*Oryza sativa* L.) using near isogenic lines. *Theor Appl Genet* 111:702-710.
125. Xu Y, McCouch SR, Zhang Q (2005) How can we use genomics to improve cereals with rice as a reference genome? *Plant Mol Biol* 59:7-26.
126. Lu Q, Li XH, Guo D, Xu CG, Zhang Q (2005) Localization of *pms3*, a gene for photoperiod-sensitive genic male sterility, to a 28.4-kb DNA fragment. *Mol Gen Genomics* 273:507-511.
127. Qiu SQ, Liu K, Jiang JX, Song X, Xu CG, Li XH, Zhang Q (2005) Delimitation of the rice wide compatibility gene *S5n* to a 40-kb DNA fragment. *Theor Appl Genet* 111:1080-1086.
128. Chen H, Tang W, Xu C, Li X, Lin Y, Zhang Q (2005) Transgenic indica rice plants harboring a synthetic *cry2A\** gene of *Bacillus thuringiensis* exhibit enhanced resistance against lepidopteran rice pests. *Theor Appl Genet* 111:1330-1337.
129. Lian X, Xing Y, Yan H, Xu C, Li X, Zhang Q (2005) QTLs for low nitrogen tolerance at seedling stage identified using a recombinant inbred line population derived from an elite rice hybrid. *Theor Appl Genet* 112:85-96.
130. Zhang J, Li C, Wu C, Xiong L, Chen G, Zhang Q, Wang S (2006) RMD: a rice mutant database for functional analysis of the rice genome. *Nucleic Acids Res* 34:D745–D748.
131. Wang GW, He YQ, Xu CG, Zhang Q (2006) Fine mapping of *f5-Du*, a gene conferring wide-compatibility for pollen fertility in inter-subspecific hybrids of rice (*Oryza sativa* L.). *Theor Appl Genet* 112:382-387.
132. Fan C, Xing Y, Mao H, Lu T, Han B, Xu C, Zhang Q (2006) *GS3*, a major QTL for grain length and weight and minor QTL for grain width and thickness in rice, encodes a putative transmembrane protein. *Theor Appl Genet* 112:1161-1171.
133. Yue B, Xue W, Xiong L, Yu X, Luo L, Cui K, Jin D, Xing Y, Zhang Q (2006) Genetic basis of drought resistance at reproductive stage in rice: separation of drought tolerance from drought avoidance. *Genetics* 172:1213-1228.
134. Lian X, Wang S, Zhang J, Feng Q, Zhang L, Fan D, Li X, D Yuan, Han B, Zhang Q (2006) Expression profiles of 10,422 genes at early stage of low nitrogen stress in rice assayed using a cDNA microarray. *Plant Mol Biol* 60:617-631.
135. Tang W, Chen H, Xu C, Li X, Lin Y, Zhang Q (2006) Development of insect resistant transgenic indica rice with a synthetic *CryIC\** gene. *Mol Breed* 18:1-10.
136. Chu Z, Yuan M, Yao J, Ge X., Yuan B, Xu C, Li X, Fu B, Li Z, Bennetzen JL, Zhang Q, Wang S (2006) Promoter mutations of an essential gene for pollen development result in disease resistance in rice. *Genes Dev* 20:1250-1255.
137. Liang D, Wu C, Li C, Xu C, Zhang J, Kilian A, Li X, Zhang Q, Xiong L (2006) Establishment of a patterned GAL4-VP16 transactivation system for discovering gene function in rice. *Plant J* 46:1059-1072.
138. Yan X, Wu P, Ling H, Xu G, Xu F, Zhang Q (2006) Plant nutriomics in China — An overview. *Ann Bot* 98:473-482. (invited review)
139. Hu H, Dai M, Yao J, Xiao B, Li X, Zhang Q, Xiong L (2006) Overexpressing a NAM, ATAF, and CUC (NAC) transcription factor enhances drought resistance and salt tolerance in rice. *Proc Natl Acad Sci USA* 103:12987-12992.
140. Huang Y, Zhang L, Zhang J, Yuan D, Xu C, Li X, Zhou D, Wang S, Zhang Q (2006) Heterosis and polymorphisms of gene expression in an elite rice hybrid as revealed by a microarray analysis of 9198 unique ESTs. *Plant Mol Biol* 62:579-591.

141. Huang Y, Li L, Chen Y, Li X, Xu C, Wang S, Zhang Q (2006) Comparative analysis of gene expression at early seedling stage between a rice hybrid and its parents using a cDNA microarray of 9198 uni-sequences. *Science in China Series C* 49:519-529.
142. Zhang Y, Luo L, Xu C, Zhang Q, Xing Y (2006) Quantitative trait loci for panicle size, heading date and plant height co-segregating in trait-performance derived near-isogenic lines of rice (*Oryza sativa*). *Theor Appl Genet* 113:361-368.
143. Zhang J, Guo D, Chang Y, You C, Li X, Dai X, Weng Q, Zhang J, Chen G, Li X, Liu H, Han B, Zhang Q, Wu C (2007) Non-random distribution of T-DNA insertions at various levels of the genome hierarchy as revealed by analyzing 13 804 T-DNA flanking sequences from an enhancer-trap mutant library. *Plant J.* 49:947-959.
144. Yu JS, Fan YR, Liu N, Shan Y, Li XH, Zhang Q (2007) Rapid genome evolution in the *Pms1* region of rice revealed by comparative sequence analysis. *Chin Sci Bull* 52:912-921.
145. Han B, Xue Y, Li J, Deng XW, Zhang Q (2007) Rice functional genomics research in China. *Phil Trans R Soc B* 362:1009-1021.
146. Zhang Q (2007) Strategies for developing Green Super Rice. *Proc Natl Acad Sci USA* 104:16402-16409.
147. Hua H, Lu Q, Cai M, Xu C, Zhou D, Li X, Zhang Q (2007) Analysis of rice genes induced by striped stemborer (*Chilo suppressalis*) attack identified a promoter fragment highly specifically responsive to insect feeding. *Plant Mol Biol* 65:519-530.
148. 於金生, 范优荣, 刘南, 山燕, 张启发 (2007) 序列比较分析揭示水稻 *Pms1* 区段基因组的快速进化. *科学通报* 52:540-547.
149. Wang LQ, Liu WJ, Xu YB, He YQ, Luo LJ, Xing YZ, Xu CG, Zhang Q (2007) Genetic basis of 17 traits and viscosity parameters characterizing the eating and cooking quality of the rice grain. *Theor Appl Genet* 115:463-476.
150. Xue W, Xing Y, Weng X, Zhao Y, Tang W, Wang L, Zhou H, Yu S, Xu C, Li X, Zhang Q (2008) Natural variation in *Ghd7* is an important regulator of heading date and yield potential in rice. *Nat Genet* 40:761-767.
151. Nayidu NK, Wang L, Xie W, Zhang C, Fan C, Lian X, Zhang Q, Xiong L (2008) Comprehensive sequence and expression profile analysis of PEX11 gene family in rice. *Gene* 412:59-70.
152. Chen J, Ding J, Ouyang Y, Du H, Yang J, Cheng K, Zhao J, Qiu S, Zhang X, Yao J, Liu K, Wang L, Xu C, Li X, Xue Y, Xia M, Ji Q, Lu J, Xu M, Zhang Q (2008) A triallelic system of S5 is a major regulator of the reproductive barrier and compatibility of indica-japonica hybrids in rice. *Proc Natl Acad Sci USA* 105:11436-11441.
153. Wu C, You C, Li C, Long T, Chen G, Byrne ME, Zhang Q (2008) *RIDL1*, encoding a Cys2/His2-type zinc finger transcription factor, acts as a master switch from vegetative to floral development in rice. *Proc Natl Acad Sci USA* 105:12915-12920.
154. Han B, Zhang Q (2008) Rice genome research: current status and future perspectives. *The Plant Genome* 1:71-76.
155. Zhang Q, Li J, Xue Y, Han B, Deng XW (2008) Rice 2020: a call for an international coordinated effort in rice functional genomics. *Mol Plant* 1:715-719.
156. Xie W, Chen Y, Zhou G, Wang L, Zhang C, Zhang J, Xiao J, Zhu T, Zhang Q (2009) Single feature polymorphisms between two rice cultivars detected using a median polish method. *Theor Appl Genet* 119:151-164.
157. Xiao BZ, Chen X, Xiang CB, Tang N, Zhang Q, Xiong LZ (2009) Evaluation of seven function-known candidate genes for their effects on improving drought resistance of transgenic rice under field conditions. *Mol Plant* 2:73-83
158. Li X, Yang Y, Yao J, Chen G, Li X, Zhang Q, Wu C (2009) *FLEXIBLE CULM 1* encoding a cinnamyl-alcohol dehydrogenase controls culm mechanical strength in rice. *Plant Mol Biol* 69:685-697.
159. Krishnan A, Guiderdoni E, An G, Hsing Y, Han C, Lee MC, Yu SM, Upadhyaya N, Ramachandran S, Zhang Q, Sundaresan V, Hirochika H, Leung H, Pereira A (2009) Mutant resources in rice for functional genomics of the grasses. *Plant Physiol* 149:165-170.
160. Yuan W, Li X, Chang Y, Wen R, Chen G, Zhang Q, Wu C (2009) Mutation of the rice gene *PAIR3* results in lack of bivalent formation in meiosis. *Plant J* 59:03-315.
161. Ouyang Y, Chen J, Ding J, Zhang Q (2009) Advances in the understanding of inter-subspecific hybrid sterility and wide-compatibility in rice. *Chinese Sci Bull* 54: 2332-2341.

162. Chen J, Ouyang Y, Wang L, Xie W, Zhang Q (2009) Aspartic proteases gene family in rice: Gene structure and expression, predicted protein features and phylogenetic relation. *Gene* 442: 108-118.
163. Cai H, Zhou Y, Xiao J, Li X, Zhang Q, Lian X (2009) Overexpressed glutamine synthetase gene modifies nitrogen metabolism and abiotic stress responses in rice. *Plant Cell Rep* 28:527-537.
164. Chang Y, Gong L, Yuan W, Li X, Chen G, Li X, Zhang Q, Wu C (2009) Replication protein A (*RPA1a*) is required for meiotic and somatic DNA repair but is dispensable for DNA replication and homologous recombination in rice. *Plant Physiol* 151:2162–2173.
165. Huang J, Zhao X, Yu H, Ouyang Y, Wang L, Zhang Q (2009) The ankyrin repeat gene family in rice: genome-wide identification, classification and expression profiling. *Plant Mol Biol* 71:207-226.
166. Ma K, Xiao J, Li X, Zhang Q, Lian X (2009) Sequence and expression analysis of the C3HC4-type RING finger gene family in rice. *Gene* 444:33-45.
167. Ouyang Y, Chen J, Xie W, Wang L, Zhang Q (2009) Comprehensive sequence and expression profile analysis of *Hsp20* gene family in rice. *Plant Mol Biol* 70:341-357.
168. Qiu X, Xie W, Lian X, Zhang Q (2009) Molecular analyses of the rice glutamate dehydrogenase gene family and their response to nitrogen and phosphorous deprivation. *Plant Cell Rep* 28:1115-1126.
169. Dai X, You C, Wang L, Chen G, Zhang Q, Wu C (2009) Molecular characterization, expression pattern, and function analysis of the *OsBCIL* family in rice. *Plant Mol Biol* 71:469-481.
170. Zhou Y, Cai H, Xiao J, Li X, Zhang Q, Lian X (2009) Over-expression of aspartate aminotransferase genes in rice resulted in altered nitrogen metabolism and increased amino acid content in seeds. *Theor Appl Genet* 118:1381-1390.
171. Chen H, Lin Y J, Zhang Q (2009) Review and prospect of transgenic rice research. *Chinese Sci Bull* 54: 4049-4068.
172. Wang L, Xie W, Chen Y, Tang W, Yang J, Ye R, Liu L, Lin Y, Xu C, Xiao J, Zhang Q (2010) A dynamic gene expression atlas covering the entire life cycle of rice. *Plant J* 61: 752–766.
173. Ouyang Y, Liu YG, Zhang Q (2010) Hybrid sterility in plant: stories from rice. *Curr Opin Plant Biol* 13:186-192.
174. Xing Y, Zhang Q (2010) Genetic and molecular bases of rice yield. *Annu Rev Plant Biol* 61:421-442.
175. Xie W, Feng Q, Yu H, Huang X, Zhao Q, Xing Y, Yu S, Han B, Zhang Q (2010) Parent-independent genotyping for constructing an ultrahigh-density linkage map based on population sequencing. *Proc Natl Acad Sci USA* 107:10578–10583.
176. Wang J, Yu H, Xie W, Xing Y, Yu S, Xu C, Li X, Xiao J, Zhang Q (2010) A global analysis of QTLs for expression variations in rice shoot at early seedling stage. *Plant J* 63:1063-1074.
177. Huang X, Wei X, Sang T, Zhao Q, Feng Q, Zhao Y, Li C, Zhu C, Lu T, Zhang Z, Li M, Fan D, Guo Y, Wang A, Wang L, Deng L, Li W, Lu Y, Weng Q, Liu K, Huang T, Zhou T, Jing Y, Li W, Lin Z, Buckler ES, Qian Q, Zhang Q, Li J, Han B (2010) Genome-wide association studies of 14 agronomic traits in rice landraces. *Nat Genet* 42: 961–967.
178. Mao H, Sun S, Yao J, Wang C, Yu S, Xu C, Li X, Zhang Q (2010) Linking differential domain functions of the GS3 protein to natural variation of grain size in rice. *Proc Natl Acad Sci USA* 107: 19579–19584.
179. 张平博, 丁寄花, 张启发 (2010) 光敏核不育水稻对日照长度处理反应的叶片及部位. *分子植物育种* 8:641-646.
180. Li X, Gao X, Wei Y, Deng L, Ouyang Y, Chen G, Li X, Zhang Q, Wu C (2011) Rice APOPTOSIS INHIBITOR5 coupled with two DEAD-box adenosine 59-triphosphate-dependent RNA helicases regulates tapetum degeneration. *Plant Cell* 23:1416-34.
181. Yan WH, Wang P, Chen HX, Zhou HJ, Li QP, Wang CR, Ding ZH, Zhang YS, Yu SB, Xing YZ, Zhang QF (2011) A major QTL, *Ghd8*, plays pleiotropic roles in regulating grain productivity, plant height, and heading date in rice. *Mol Plant* 4:319–330.
182. Zhang C, Wang J, Xie W, Zhou Gang, Long M, and Zhang Q (2011) Dynamic programming procedure for searching optimal models to estimate substitution rates based on the maximum-likelihood method. *Proc Natl Acad Sci USA* 108:7860–7865
183. Du H, Ouyang Y, Zhang C, Zhang Q (2011) Complex evolution of S5, a major reproductive barrier regulator, in the cultivated rice *Oryza sativa* and its wild relatives. *New Phytol*

- 191:275-287.
184. Yu H, Xie W, Wang J, Xing Y, Xu C, Li X, Xiao J, Zhang Q (2011) Gains in QTL detection using an ultra-high density SNP map based on population sequencing relative to traditional RFLP/SSR markers. *PLoS ONE* 6(3): e17595.
  185. Ma Q, Hedden P, Zhang Q (2011) Heterosis in rice seedlings: its relationship to gibberellin content and expression of gibberellin metabolism and signaling genes. *Plant Physiol* 156: 1905–1920.
  186. Li Y, Fan C, Xing Y, Jiang Y, Luo L, Sun L, Shao D, Xu C, Li X, Xiao J, He Y, Zhang Q (2011) Natural variation in *GS5* plays an important role in regulating grain size and yield in rice. *Nat Genet* 43:1266-1269.
  187. Jiang Y, Cai Z, Xie W, Long T, Yu H, Zhang Q (2012) Rice functional genomics research: Progress and implications for crop genetic improvement. *Biotechnol Adv* 30:1059-1070.
  188. Ding J, Lu Q, Ouyang Y, Mao H, Zhang P, Yao J, Xu C, Li X, Xiao J, Zhang Q (2012) A long noncoding RNA regulates photoperiod-sensitive male sterility, an essential component of hybrid rice. *Proc Natl Acad Sci USA* 109:2654-2659.
  189. Jiang Y, Bao L, Jeong SY, Kim SK, Xu C, Li X, Zhang Q (2012) XIAO is involved in the control of organ size by contributing to the regulation of signaling and homeostasis of brassinosteroids and cell cycling in rice. *Plant J* 70:398-408.
  190. Zhang CC, Yuan WY, Zhang QF (2012) *RPL1*, a gene involved in epigenetic processes regulates phenotypic plasticity in rice. *Mol Plant* 5: 482-493.
  191. Hu Y, Liu D, Zhong X, Zhang C, Zhang Q, Zhou DX (2012) CHD3 protein recognizes and regulates methylated histone H3 lysines 4 and 27 over a subset of targets in the rice genome. *Proc Natl Acad Sci USA* 109:5773–5778.
  192. Yang J, Zhao X, Cheng K, Du H, Ouyang Y, Chen J, Qiu S, Huang J, Jiang Y, Jiang L, Ding J, Wang J, Xu C, Li X, Zhang Q (2012) A killer-protector system regulates both hybrid sterility and segregation distortion in rice. *Science* 337:1336-1340.
  193. Zhou G, Chen Y, Yao W, Zhang C, Xie W, Hua J, Xing Y, Xiao J, Zhang Q (2012) Genetic composition of yield heterosis in an elite rice hybrid. *Proc Natl Acad Sci USA* 15847–15852.
  194. Ding J, Shen J, Mao H, Xu C, Xie W, Zhang Q (2012) RNA-directed DNA methylation is involved in controlling photoperiod-sensitive male sterility in rice. *Mol Plant* 5:1210-16.
  195. Goff SA, Zhang Q (2013) Heterosis in elite hybrid rice: speculation on the genetic and biochemical mechanisms. *Curr Opin Plant Biol* 16:221–227.
  196. Ouyang Y, Zhang Q (2013) Understanding reproductive isolation based on the rice model. *Annu Rev Plant Biol* 64:111-135.
  197. Chen Q, Chen X, Wang Q, Zhang F, Lou Z, Zhang Q, Zhou DX. (2013) Structural basis of a histone H3 lysine 4 demethylase required for stem elongation in rice. *PLoS Genet* 9(1): e1003239. doi:10.1371/journal.pgen.1003239.
  198. Huang J, Zhao X, Cheng K, Jiang Y, Ouyang Y, Xu C, Li X, Xiao J, Zhang Q (2013) OsAP65, a rice aspartic protease, is essential for male fertility and plays a role in pollen germination and pollen tube growth. *J Exp Bot* 64:3351–3360.
  199. 肖景华, 吴昌银, 张启发 (2013) 水稻功能基因组研究进展与发展展望. *中国农业科技导报* 15:1–7.
  200. Gong L, Chen W, Gao Y, Liu X, Zhang H, Xu C, Yu S, Zhang Q, Luo J (2013) Genetic analysis of the metabolome exemplified using a rice population. *Proc Natl Acad Sci USA* 110:20320-20325.
  201. Yu H, Xie W, Li J, Zhou F, Zhang Q (2014) A whole genome SNP array (RICE6K) for genomic breeding in rice. *Plant Biotechnol J* 12:28-37.
  202. Chen H, Xie W, He H, Yu H, Chen W, Li J, Yu R, Yao Y, Zhang W, He Y, Tang X, Zhou F, Deng XW, Zhang Q (2014) A High-density SNP genotyping array for rice biology and molecular breeding. *Mol Plant* 7:541-553.
  203. 侯晓晔, 朱丹, 喻辉辉, 龚亮, 徐才国, 张启发 (2014) 利用重组自交系群体在长日照和短日照条件下进行水稻抽穗期QTL分析. *华中农业大学学报* 33:1–7.
  204. Weng X, Wang L, Wang J, Hu Y, Du H, Xu C, Xing Y, Li X, Xiao J, Zhang Q (2014) Grain number, plant height, and heading date7 is a central regulator of growth, development, and stress response. *Plant Physiol* 164: 735–747.
  205. Wang J, Yu H, Weng X, Xie W, Xu C, Li X, Xiao J, Zhang Q (2014) An expression

- quantitative trait loci-guided co-expression analysis for constructing regulatory network using a rice recombinant inbred line population. *J Exp Bot* 65:1069-1079.
206. Xu S, Zhu D, Zhang Q (2014) Predicting hybrid performance in rice using genomic best linear unbiased prediction. *Proc Natl Acad Sci USA* 111:12456–12461.
  207. Wang J, Yao W, Zhu D, Xie W, Zhang Q (2015) Genetic basis of sRNA quantitative variation analyzed using an experimental population derived from an elite rice hybrid. *eLife* 2015;4:e03913.
  208. Xu CJ, Liu Y, Li Y, Xu X, Xu CG, Li X, Xiao J, Zhang Q (2015) Differential expression of *GS5* regulates grain size in rice. *J Exp Bot* 66:2611-2623.
  209. Xie W, Wang G, Yuan M, Yao W, Lyu K, Zhao H, Yang M, Li P, Zhang X, Yuan J, Wang Q, Liu F, Dong H, Zhang L, Li X, Meng X, Zhang W, Xiong L, He Y, Wang S, Yu S, Xu C, Luo J, Li X, Xiao J, Lian X, Zhang Q (2015). Breeding signatures of rice improvement revealed by a genomic variation map from a large germplasm collection. *Proc Natl Acad Sci USA* 112: E5411-E5419.
  210. Wang L, Sun S, Jin J, Fu D, Yang X, Weng X, Xu C, Li X, Xiao J, Zhang Q (2015) Coordinated regulation of vegetative and reproductive branching in rice. *Proc Natl Acad Sci USA* 112:15504-15509.
  211. Zhu D, Zhou G, Xu C, Zhang Q (2016) Genetic components of heterosis for seedling traits in an elite rice hybrid analyzed using an immortalized F<sub>2</sub> population. *JGG* 43:87-97.
  212. Zhang J, Chen LL, Xing F, Kudrna AD, Yao W, Copetti D, Mu T, Li W, Song JM, Xie W, Lee S, Talag J, Shao L, An Y, Zhang CL, Ouyang Y, Sun S, Jiao WB, Lv F, Du B, Luo M, Maldonado CE, Goicoechea JL, Xiong L, Wu C, Xing Y, Zhou DX, Yu S, Zhao Y, Wang G, Yu Y, Luo Y, Zhou ZW, Hurtado BEP, Danowitz A, Wing RA, Zhang Q (2016) Extensive sequence divergence between the reference genomes of two elite *indica* rice varieties Zhenshan 97 and Minghui 63. *Proc Natl Acad Sci USA* 113 (35) E5163-E5171.
  213. Zhang J, Chen LL, Xing F, Kudrna AD, Yao W, Copetti D, Mu T, Li W, Song JM, Xie W, Lee S, Talag J, Shao L, An Y, Zhang CL, Ouyang Y, Sun S, Jiao WB, Lv F, Du B, Luo M, Maldonado CE, Goicoechea JL, Xiong L, Wu C, Xing Y, Zhou DX, Yu S, Zhao Y, Wang G, Yu Y, Luo Y, Zhou ZW, Hurtado BEP, Danowitz A, Wing RA, Zhang Q (2016) Data Descriptor: Building two *indica* rice reference genomes with PacBio long-read and Illumina paired-end sequencing data. *Scientific Data* 3:160076.
  214. Mi J, Li G, Huang J, Yu H, Zhou F, Zhang Q, Ouyang Y, Mou T (2016) Stacking *S5-n* and *f5-n* to overcome sterility in *indica-japonica* hybrid rice. *Theor Appl Genet* 129:563-575
  215. Xu S, Xu Y, Gong L, Zhang Q (2016) Metabolomic prediction of yield in hybrid rice. *Plant J* 88:87-97.
  216. Zhao Y, Huang J, Wang Z, Jing S, Wang Y, Ouyang Y, Cai B, Xin XF, Liu X, Zhang C, Pan Y, Ma R, Li Q, Jiang W, Zeng Y, Shangguan X, Wang H, Du B, Zhu L, Xu X, Feng YQ, He SY, Chen R, Zhang Q, He G (2016) Allelic diversity in an NLR gene *BPH9* enables rice to combat planthopper variation. *Proc Natl Acad Sci USA* 113:12850–12855.
  217. Ouyang Y, Li G, Mi J, Xu C, Du H, Zhang C, Xie W, Li X, Xiao J, Song H, Zhang Q (2016) Origination and establishment of a trigenic reproductive isolation system in rice. *Mol Plant* 9:1542-45.
  218. 范优荣, 曹晓风, 张启发 (2016) 光温敏雄性不育水稻的研究进展. 杂交水稻50年专辑, 科学通报 61:3822-3832.
  219. 余四斌, 熊银, 肖景华, 罗利军, 张启发 (2016) 杂交稻与绿色超级稻. 杂交水稻50年专辑, 科学通报 61:3797-3803.
  220. Fan Y, Yang J, Mathioni SM, Yu J, Shen J, Yang X, Wang L, Zhang Q, Cai Z, Xu C, Li X, Xiao J, Meyers BC, Zhang Q (2016) *PMSIT*, producing phased small-interfering RNAs, regulates photoperiod-sensitive male sterility in rice. *Proc Natl Acad Sci USA* 113:15144-15149.

## Contributions to books

1. Zhang Q 1991. Population and population improvement of maize. In: *Maize Breeding*. Li JL (ed), Agricultural Press, Beijing, pp. 264-320.
2. Zhang Q 1995. Molecular biology studies of the Hubei photoperiod sensitive genic male sterile rice. In: *Mechanisms of Fertility Alteration of Hubei Photoperiod Sensitive Male Sterile Rice and their Application in Two Line Hybrid Rice Breeding*. Li ZB (ed), Hubei Science and Technology Publisher, Wuhan, pp. 333-364.

3. Zhang Q (1999) Population genetics and evolution of barley. In: *Breeding and Bioengineering of Barley*. Zhu MY, Huang PZ (eds), Shanghai Science and Technology Publisher, pp. 86-114.
4. Zhang Q (1999) Application of molecular markers in barley genetics and breeding. In: *Breeding and Bioengineering of Barley*. Zhu MY, Huang PZ (eds), Shanghai Science and Technology Publisher, pp. 263-297.
5. Yu S, Zhang Q (1999) Applications of genome mapping in rice genetics and breeding. In: *Engineering of the Rice Genome*, Shanghai Science and Technology Press. Hong G (ed), Shanghai, pp. 79-116.
6. Zhang Q, Yu S (1999) Molecular marker-based gene tagging and its impact on rice improvement. In: *Rice Breeding and Genetics -Research Priorities and Challenges*, J.S. Nanda (ed.), Science Publishers Inc., Enfield, New Hampshire, pp. 241-270.
7. Zhang Q (2002) China. In: *Agricultural Biotechnology: Country Case Studies – a Decade of Development*. Persley GJ, MacIntyre LR (eds) CAB International, Wallingford, UK, pp 41-50.
8. 张启发主编 (2010) 绿色超级稻的构想与实践. 科学出版社, 北京.
9. Zhang Q, Wing R (2013) (eds) *Genetics and Genomics of Rice*. Springer, New York, Heidelberg, Dordrecht, London
10. Zhu D, Zhang Q (2013) Heterosis. In *Genetics and Genomics of Rice*. Zhang Q, Wing R (eds) Springer, New York, Heidelberg, Dordrecht, London pp 255-268
11. 张启发主编 (2015) 资源节约型、环境友好型农业生产体系的理论与实践. 科学出版社, 北京.

### **Full Papers in Proceedings and Symposia**

1. Zhang Q (1989) Ribosomal RNA gene in barley: spacer length polymorphism and copy number variation. A Symposium of Frontiers in Life Science, November, 1989, Wuhan (in Chinese).
2. Zhang Q, Duan G, Yang G (1990) Ribosomal DNA spacer length polymorphism in barley from China. A Symposium on Theories and Applications of Plant Genetics, Nanjing, Genetics Society of China, p95-98 (in Chinese).
3. Zhang Q, Dai X (1991) Patterns of diversity and geographical differentiation of isozymes in cultivated barley of Tibet. *Barley Genetics VI. Proc 6th Intern Barley Genetics Symposium Helsingborg, Sweden*, edited by L. Munck, pp 25-27, Munksgaard International Publishers Ltd., Copenhagen.
4. Zhang Q (1991) Applications of restriction fragment length polymorphisms in cereal breeding. *Proceedings of the Congress for High and New Technologies in Agriculture*, August 21-24, Beijing, Scientific Association of China (ed), pp 141-145, China Science and Technology Press.
5. Zhang Q, Saghai Maroof MA (1992) Patterns of restriction fragment length polymorphisms in corn, barley and rice. *Agricultural Biotechnology, Proceedings of Asia-Pacific Conference on Agricultural Biotechnology*, You CB, Chen ZL (eds), pp206-209, China Science and Technology Press.
6. Zhang Q (1996) Molecular diversity of rice germplasm and correlation between marker divergence and heterosis. *Crop Research in Asia: Achievements and Perspective, Proceedings of the 2nd Asian Crop Science Conference*, Fukui, Japan, August 21-23, 1995, Ishii R and Horie T (ed), pp 314-319.
7. Zhang Q, Saghai Maroof MA, Yang GP, Liu KD, Zhou ZQ, Gravois KA, Xu CG, Gao YJ (1995) Relationship between molecular marker polymorphism and hybrid performance in rice. In *Rice Genetics III*, Khush GS (ed), *Proceedings of the 3rd International Rice Genetics Symposium*, Manila, Philippines, October 16-20, 1995, pp 317-326.
8. Zhang Q, Huang N (1996) Mapping and molecular marker-based genetic analysis of fertility related genes for efficient hybrid rice breeding. In: *Advances in Hybrid Rice Technology*, Virmani SS, Siddiq EA, Muralidharah K, *Proceedings of 3rd International Symposium on Hybrid rice*. November 14-16, 1996, Hyderabad, India, pp. 243-256.
9. Zhang Q, Li J (1998) Progresses in the studies of genetic and molecular bases of heterosis in rice. *Proceedings of the Symposium on Crop Breeding*, Crop Science Society of China, April 13-14, Beijing, edited by L. Z. Wang and J. R. Dai, *Agricultural Science and Technology Press of China*, pp. 1-10.
10. Zhang Q (1999) Agricultural biotechnology opportunities to meet the challenges of food production. In: *Agricultural Biotechnology and the Poor*, Persley GJ, Lantin MM (eds), *Proceedings of an International Conference, Consultative Group on International Agricultural Research and US National Academy of Sciences*, Washington DC, October 21-22, 1999, pp. 45-50.

11. Zhang Q, Hua J, Yu S, Xiong L, Xu C (2001) Genetic and molecular basis of heterosis in rice. In: Rice Genetics IV, Khush GS, Brar DS, Hardy B, International Rice Research Institute, Los Baños, Philippines, pp 173-185.
12. Zhang Q, Li Z (2003) Advances in the understanding of the genetic basis of heterosis in rice. In Hybrid Rice for Food Security, Poverty Alleviation, and Environmental Protection, Virmani SS, Mao CX, Hardy B, International Rice Research Institute, Los Baños, Philippines, pp 119-134.

### **Plenary and invited presentations in international meetings**

1. Zhang Q (1994) Molecular marker based genetic analysis of male sterility and heterosis in rice. Plenary session speech, Seventh Meeting of the Rockefeller Foundation's International Program on Rice Biotechnology, May 16-20, 1994, Bali, Indonesia.
2. Zhang Q (1995) Molecular diversity of rice germplasm and correlation between marker divergence and heterosis. Invited speech, 2nd Asian Crop Science Conference, August 21-23, 1995, Fukui, Japan.
3. Zhang Q (1995) Predicting heterosis in rice using molecular markers. Invited speech, FPU Symposium on Bioscience II, August 24, Fukui, Japan.
4. Zhang Q, Saghai Maroof MA, Yang GP, Liu KD, Zhou ZQ, Gravois KA, Xu CG, Gao YJ (1995) Relationship between molecular marker polymorphism and hybrid performance in rice. Plenary session speech, 3rd International Rice Genetics Symposium, October 16-20, 1995, Manila, Philippines.
5. Zhang Q (1996) Genetic and molecular basis of indica-japonica hybrid sterility in rice. Plenary speech (invited but unable to attend), Fifth International symposium on rice molecular biology. October 14-15, 1996, Taipei, Taiwan.
6. Zhang Q, Huang N (1996) Mapping and molecular marker-based genetic analysis of fertility related genes for efficient hybrid rice breeding. Plenary session speech, 3rd International Symposium on Hybrid rice. November 14-16, 1996, Hyderabad, India.
7. Yu SB, Li JX, Xu CG, Tan YF, Gao YJ, Li XH, Zhang Q, Saghai Maroof MA (1997) Evaluation of epistasis as the genetic basis of heterosis in rice. Plenary session speech. General Meeting of the Rockefeller Foundation's International Program on Rice Biotechnology, September 16-19, 1997, Malacca, Malaysia.
8. Zhang Q (1998) Genome studies and rice genetic improvement. Invited speech, 14th Australasian Biotechnology Conference. April 19-23, 1998, Adelaide, Australia.
9. Zhang Q (1998) Genetic and molecular basis of heterosis in rice. Invited Symposium Speech, 18<sup>th</sup> International Genetics Congress. August 10-15, 1998, Beijing.
10. Zhang Q (1998) Genome research and rice genetic improvement. Invited plenary session speech, 6<sup>th</sup> International Symposium on rice molecular biology, October 31-November 2, 1998, Shanghai and Hangzhou.
11. Zhang Q (1999) Progresses in map-based cloning of *pms1*, *S5* and *Xa22* genes. Invited workshop speech, Plant & Animal Genome IV. The International Conference on the Status of Plant & Animal Genome Research, January 17-21, 1999, San Diego.
12. Hua JP, Xing YZ, Xu CG, Sun XL, Zhang Q (1999) Mapping heterosis using an immortalized F<sub>2</sub> population. Plenary session speech, General Meeting of the Rockefeller Foundation's International Program on Rice Biotechnology, September 21-25, 1999, Phuket, Thailand.
13. Zhang Q (1999) Meeting the challenges of food production: the opportunities of agricultural biotechnology in China. Invited speech, Ensuring Food Security, Protecting the Environment, and Reducing Poverty in Developing Countries: Can Biotechnology Help? –An International Conference on Biotechnology, October 21-22, 1999, The World Bank, Washington DC.
14. Zhang Q (2000) Improvement of hybrid rice by molecular breeding. China-ASEN Workshop on Transgenic Plants. July 30-August 5, 2000, Beijing.
15. Zhang Q (2000) Biotechnology for crop improvement – The Chinese rice program. Keynote speech, US/China Conference on Cooperation in Agriculture, September 25-26, 2000, Riverside, California.
16. Zhang Q, Hua J, Yu S, Xiong L, Xu C (2000) Genetic and molecular basis of heterosis in rice. Plenary session speech, 4<sup>th</sup> International Rice Genetics Symposium, October 23-27, 2000, IRRI, Philippines.
17. Zhang Q (2001) Improvement of hybrid rice by molecular breeding. Plant & Animal Genome IX, The International Conference on the Status of Plant & Animal Genome Research, January 13-17, 2001, San Diego.
18. Zhang Q (2001) Functional genomics and crop improvement for sustainable agriculture. Sino-Germen Workshop on Sustainable Agricultural Production in China, December 12-15, 2001, Beijing.



19. Zhang Q, Li Z (2002) Advances in the understanding of the genetic basis of heterosis in rice. Plenary session speech, 4<sup>th</sup> International Symposium on Hybrid Rice, May 14-17, 2002, Hanoi.
20. Zhang Q (2002) Progresses in genetic and molecular understanding of drought tolerance for the improvement of irrigated rice under drought stressed conditions in central and southern China. Invited speech, An International Workshop on Progress Toward Developing resilient Crops for Drought-Prone Areas, May 27-30, 2002, IRRI, Philippines.
21. Zhang Q (2002) A national initiative of China on rice functional genomics. Invited symposium speech, International Rice Congress, September 16-19, 2002, Beijing.
22. Zhang Q (2002) Advances in understanding the genetic basis of heterosis in rice. Invited speech, 1<sup>st</sup> International Symposium on Crop Genomics and Improvement, September 21-24, 2002, Wuhan.
23. Zhang Q (2002) Genomics-based genetic understanding and improvement of hybrid rice. Invited speech, A Symposium on Plant Breeding Aspects of Genomics. Korean Society of Breeding, October 24-25, 2002, Suanbo, Korea.
24. Zhang Q (2003) Progresses on rice functional genomics in China. The First International Symposium on Rice Functional Genomics. November 19-21, 2003, Shanghai.
25. Zhang Q (2004) An Overview of Rice Functional Genomics Research in China. Invited Plenary speech, Crop Functional Genomics 2004. April 7-10, Jeju, Korea.
26. Yue B, Zhang ZL, Jin DM, Cui KH, Xue WY, Xiong L, Zhang Q (2004) Genetic and molecular understanding of drought tolerance for the improvement of irrigated rice under drought stressed conditions in central and southern China. Plenary talk, Resilient Crops for Water Limited Conditions. May 23-28, 2004, Cuernavaca, Mexico.
27. Xu Y, Zhang Q (2004) The Rice Genome: Implications for breeding rice and other cereals. Invited symposium speech, 4<sup>th</sup> International Crop Science Congress. September 26-October 1, Brisbane, Australia.
28. Zhang Q, Lian X, Zhou Z, Zhao Z, Xu C, Wang S, Zhang J, Yuan D, Li X (2004) Genomics approaches to improving nitrogen use efficiency of rice. Plenary speech, 2<sup>nd</sup> International Symposium on Rice Functional Genomics, November 15-17, 2004, Tucson, USA.
29. Zhang Q (2005) Why does China need GM crops? Invited keynote speech, A Workshop on Genetically Modified Organisms in Crops: Present Status and Perspectives, January 25, 2005, Bologna, Italy.
30. Zhang Q (2005) In search of genetic and molecular basis of heterosis in rice. Invited speech, Heterosis in Plants, 20<sup>th</sup> Colloquium, University Hohenheim, January 27, 2005, Stuttgart, Germany.
31. Zhang Q (2005) The Chinese program on rice functional genomics. Invited keynote speech, 2<sup>nd</sup> UK Small Grain Cereals Workshop, March 9-11, 2005, Aberdeen, UK.
32. Zhang Q (2005) Integration of germplasm, functional genomics and rice genetic improvement. Invited speech, International Symposium on Genomics-Based Plant Germplasm Research, April 25-28, 2005, Beijing, China.
33. Zhang Q (2005) Genomics approaches to improving nitrogen use efficiency in rice. The Annals of Botany Lecture, 15<sup>th</sup> International Plant Nutrition Colloquium, September 14-19, 2005, Beijing, China.
34. Zhang Q (2005) Genomics-based strategies for the development of “green super rice”. Invited plenary speech, 5<sup>th</sup> International Rice Genetics Symposium and 3<sup>rd</sup> International Symposium on Rice Functional Genomics, November 19-23, 2005, Manila, Philippines.
35. Zhang Q (2006) Why heterosis is low in grain weight of cereals? Invited keynote speech, A Symposium 'Heterosis in Plants', May 18-20, 2006, Max-Planck-Institute of Molecular Plant Physiology in Potsdam/Golm, Germany.
36. Zhang Q (2006) Genomics-based strategies toward the development of “green super rice”. Invited plenary speech, 11<sup>th</sup> International Congress of Plant Tissue Culture and Biotechnology, August 15-18, 2006, Beijing, China.
37. Zhang Q (2006) Progresses in research and development of transgenic crops in China. Invited speech, The First International Forum on Agricultural GMOs. September 20-21, 2006, Beijing, China.
38. Zhang Q (2006) A rice mutant library developed using an enhancer trap construct and its utilization in functional analysis of the rice genome. Invited speech, 4<sup>th</sup> International Rice Functional Genomics Symposium. October 9-11, 2006, Montpellier, France
39. Zhang Q (2006) Genomics-based strategies toward the development of “green super rice”. Invited plenary speech, 5<sup>th</sup> Plant Genomics European Meeting. October 11-14, 2006, Venice, Italy.
40. Zhang Q (2007) Progresses in rice functional genomic research in China. Invited speech, Gordon Research Conference in Agricultural Sciences, March 11-16, Ventura, CA, USA.
41. Zhang, Q. 2007. Genomics-based strategies for the development of “green super rice”. Invited plenary speech, Second International Conference of Plant Molecular Breeding, March 23-25, Sanya, China

42. Zhang Q (2007) A major QTL simultaneously controlling yield, plant height and heading date. Invited plenary speech, 18th International Congress on Arabidopsis Research, June 21-24, Beijing, China.
43. Zhang Q (2007) Genetic basis of heterosis in crop plants. Invited plenary speech, 3rd International Congress of Quantitative Genetics, August 20-24, Hangzhou, China.
44. Zhang Q (2008) Cloning and characterization of QTLs for yield traits in rice. Invited talk, Plant & Animal Genome XVI, The International Conference on the Status of Plant & Animal Genome Research, January 12-16, 2008, San Diego.
45. Zhang Q (2008) Functional Genomics and Green Super Rice. Invited plenary speech, Fifth International Crop Science Congress, April 13-18, 2008, Jeju, Korea.
46. Zhang Q (2008) Genomic based strategies and practice toward the development of Green Super Rice. Invited plenary talk, The 5th International Hybrid Rice Symposium, September 12-14, 2008, Changsha.
47. Zhang Q (2008) Cloning and analysis of QTLs for yield traits in rice. Invited plenary talk, The 6th International Symposium of Rice Functional Genomics, November 10-12, 2008, Jeju, Korea.
48. Zhang Q (2009) Genetic and molecular characterization of inter-subspecific hybrid sterility and wide compatibility in rice. Invited talk, The International Conference on the Status of Plant & Animal Genome Research, January 10-14, 2009, San Diego.
49. Zhang Q (2009) Strategies and practice toward the development of Green Super Rice. Invited opening plenary talk, International Conference on Plant Vascular Biology and Agriculture, June 21-24, 2009, Chongqing.
50. Zhang Q (2009) Rice functional genomics research in China. Invited talk: ASPB (American Society of Plant Biologists) 2009, ASPB-CSPP (Chinese Society of Plant Physiology) joint symposium, Hawaii.
51. Zhang Q (2009) Maintaining food production under environmental challenge: the biologists response. Invited plenary talk, INTERDROUGHT-III, October 12-16, 2009, Shanghai.
52. Zhang Q (2009) Current status of transgenic rice in China. Invited symposium talk, 9<sup>th</sup> International Congress Plant Molecular Biology, October 12-16, 2009, St Louis, USA.
53. Zhang Q (2009) Genetic and molecular basis of yield and heterosis: progresses from the analyses of an elite hybrid. Invited plenary talk, 6<sup>th</sup> International Symposium on Rice Genetics/7<sup>th</sup> International Symposium on Rice Functional Genomics, November 16-18, 2009, Manila, Philippines.
54. Zhang Q (2010) Ultra-high density molecular markers for dissecting quantitative variations in a rice RIL population. Invited talk, The International Conference on the Status of Plant & Animal Genome Research, January 9-14, 2010 San Diego.
55. Zhang Q (2010) Green Super Rice: progress and perspectives. Invited Keynote presentation First International Symposium on Molecular Strategies for Crop Improvement, May 29-30, 2010, Beijing.
56. Zhang Q (2010) Rice functional genomics: progress and implications for crop genetic improvement. Invited plenary talk, 21 International Conference of Arabidopsis Research, June 6-10, Yokohama, Japan.
57. Zhang Q (2010) Rice functional genomics: progress and implications for crop genetic improvement. Invited plenary talk, 3<sup>rd</sup> International Conference on Crop Molecular Breeding, September 6-8, 2010, Beijing.
58. Zhang Q (2010) Genomics, transgenics and rice genetic improvement. Invited main lecture, 14th International Biotechnology Symposium and Exhibition, September 14-16, 2010, Rimini, Italy.
59. Zhang Q (2011) Rice functional genomics research: progress and implications for crop genetic improvement. Opening Key Note Lecture, Status Seminar, March 15-17, 2011, Potsdam.
60. Zhang Q (2011) Using the rice hybrid Shanyou 63 as a model for systems biology studies. Invited Plenary talk, 2nd International Conference on Plant Metabolism, June 30-July 1-3, 2011, Qingdao.
61. Zhang Q (2011) Genetic and molecular characterization of grain size. Plenary talk, 9<sup>th</sup> International Symposium on Rice Functional Genomics, November 7-9, 2011, Taipei.
62. Zhang Q (2012) Genetic and molecular understanding of sub-specific reproductive isolation between *indica* and *japonica* rice. Invited plenary talk, Plant Reproduction for Food XXII International Congress on Sexual Plant Reproduction, February 13-17, Melbourne, Australia.
63. Zhang Q (2012) Genetic composition of yield heterosis in an elite rice hybrid. Invited talk, China-JIC Symposium, April 26-27, Shanghai.
64. Zhang Q (2012) Plant breeding in coming years. Invited talk, Nature Conference Frontiers in plant biology: From discovery to applications. October 3-5, 2012, Aula Ghent University, Ghent, Belgium.
65. Zhang Q (2012) Understanding reproductive isolation based on the rice model. Invited talk, Symposium of the Zurich-Basel Plant Science Center: Trends and advances in plant biology, October 19, 2012, Zurich, Switzerland.

66. Zhang Q (2012) Genetic composition of yield heterosis in an elite rice hybrid. Invited talk (concurrent session), 10th International Congress on Plant Molecular Biology, October 21-26, 2012, Jeju, Korea.
67. Zhang Q (2012) Rice2020. Invited plenary talk, 10th International Symposium on Rice Functional Genomics. November 26-29, 2012, Chiangmai, Thailand.
68. Zhang Q (2012) A killer-protector system regulates hybrid sterility and segregation distortion in rice. Invited talk (concurrent session), 10th International Symposium on Rice Functional Genomics. November 26-29, 2012, Chiangmai, Thailand.
69. Zhang Q (2013) Rice genomics and biotechnology: feeding the billions. Plenary talk, Joint Conference of HGM 2013 and 21st International Congress of Genetics. April 13-18, 2013, Singapore.
70. Zhang Q (2013) Rice genetic improvement in the post genomics era. Invited talk, Korean Breeding Society Symposium: Strategies on Genomics-assisted breeding and Seed biotechnology. July 4-5, 2013, Cheongju City, Korea
71. Zhang Q (2013) Understanding reproductive isolation based on the rice model. Plenary talk, SCBA 14th International Conference, July 19-22, 2013, Xi'an.
72. Zhang Q (2013) Crop genomics and biotechnology: feeding the billions -- a rice case. Invited Opening lecture, The 10th International Congress of Plant Pathology, August 25-30, 2013, Beijing.
73. Zhang Q (2013) Understanding reproductive isolation based on the rice model. Plenary talk, 11th International Symposium on Rice Functional Genomics. November 20-23, 2013, New Delhi.
74. Zhang Q (2014) Demands for green technologies in future plant breeding. Invited speech, An International Workshop on Global Status of Transgenic Crops Jointly organized by Chinese Academy of Sciences and National Academy of Sciences of the United States of America, October 16-17, 2014, Wuhan.
75. Zhang Q (2015) Green goals and green technologies for Green Super Rice. Invited talk, CROPS 2015 Conference, May 18-21, 2015, Huntsville, Alabama.
76. Zhang Q (2015) Green goals and green technologies for Green Super Rice. Invited talk, Khush Symposium in Plant Genetics and Breeding, May 28, 2015, UC Davis.
77. Zhang Q (2015) Green Super Rice: on its way to reality. Plenary talk, 13th International Symposium on Rice Functional Genomics. September 22-14, 2015, Wuhan.
78. Zhang Q (2015) Understanding reproductive isolation based on the rice model. Opening Plenary Lecture, 11<sup>th</sup> International Congress of Plant Molecular Biology. October 25-30, 2015, Iguazu, Brazil.
79. Zhang Q (2016) Understanding genomic basis of heterosis based on an elite rice hybrid. Invited talk: IPG Conference on Heterosis, May 25-27, 2016, University of Missouri, Columbia, USA.
80. Zhang Q (2016) Green goals and green technologies of crop breeding for resource saving and environmental friendly agriculture. Invited VIP speech, The 2<sup>nd</sup> Forum on China-South Asia Technology Transfer & Collaborative Innovation, June 12-14, 2016, Kunming
81. Zhang Q (2016) Understanding the genomic basis of heterosis using an elite rice hybrid. Invited plenary talk, 7th International Crop Science Congress, August 15-19, 2016, Beijing.
82. Zhang Q (2016) Long non-coding RNAs and photoperiod sensitive male sterility in rice. Plenary talk, 14<sup>th</sup> International Symposium on Rice Functional Genomics, September 26-28, 2016, Montpellier, France.
83. Zhang Q (2016) Genomic basis of heterosis in rice and the implications for crop genetic improvement. Invited talk: Max-Planck Symposium on Complex Trait Genetics, October 6-7, 2017, Berlin, Germany.
84. Zhang Q (2016) Regulation of photoperiod male sterility by long non-coding RNAs in rice. Invited opening keynote talk: Agricultural Genomics 2016--from variation to improvement, Nature Genetics Conference, November 6-8, 2016, Shanghai.
85. Zhang Q (2016) Green target and technologies in crop breeding. Invited keynote talk, International Symposium on Modern Biotechnology and Crop Germplasm & National Crop Science Ph D Students' Forum, November 12-13, 2016, Chongqing.
86. Wang L, Zhang Q\* (2017) Boosting Rice Yield by Fine-Tuning SPL Gene Expression. Trends Plant Sci 22:643-646
87. Fan Y, Zhang Q\* (2017) Genetic and molecular characterization of photoperiod and thermo-sensitive male sterility in rice. Plant Repord doi: 10.1007/s00497-017-0310-5
88. Zhu Y, Yu Y, Cheng K, Ouyang Y, Wang J, Gong L, Zhang Q, Li X, Xiao J, Zhang Q\* (2017) Processes underlying a reproductive barrier in *indica-japonica* rice hybrids revealed by transcriptome analysis. Plant Physiol 174:1683-1696
89. Li G, Li X, Wang Y, Mi J, Xing F, Zhang D, Dong Q, Li X, Xiao J, Zhang Q, Ouyang Y\* (2017) Three representative inter and intra-subspecific crosses reveal the genetic architecture of reproductive isolation in rice. Plant J 92:349-362