古新梅 Hsin-Mei Ku

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學歷

博士學位: 美國康乃爾大學植物系 Department of Plant Biology Cornell University, USA;指導教授 Dr. Steve D Tanksley

學士學位: 國立中興大學植物病理學系

Education:

PhD: Department of Plant Biology, Cornell University, Ithaca, USA major in Plant Biology; minor in Genetics, Plant Breeding.

BSc: Department of Plant Pathology, National Chung Hsing University, Taiwan.

經歷

現職:教授, 國立中興大學農藝系

博士後研究員:美國康乃爾大學植物育種系，Dr. Steve . Tanksley 和 Dr. Susan R. McCouch 的研究室

高考助理:行政院農委會農業試驗所

Professional Experience:

Present: Professor in Agronomy Department, National Chung Hsing University, Taiwan.
Postdoctoral Research Fellow: in the Department of Plant Breeding, Cornell University, Itaca, USA. In Dr. Steve Tanksley, Dr. Susan McCouch labs.

教授課程

遺傳學與實習、高等作物遺傳學、作物遺傳學特論、作物分子遺傳學特論、作物分子育種特論、作物抗病育種。

Courses Taught:

Genetics, Crop molecular breeding and practice; Crop genomics and practices; Advanced crop genetics, Special topics in crop genetics、Special topics in plant molecular genetics, Special topics in plant molecular breeding, Crop disease resistance.

專長領域

植物分子遺傳、育種，植物基因編輯、分子標誌開發與應用、植物抗病機制、植物生物技術。

研究方向

古新梅博士為教育部公費留學生，主攻植物分子遺傳、育種，於美國康乃爾大學植物系完成博士學位，論文指導教授為 Dr. Steven D. Tanksley，畢業後繼續在植物育種系 Dr. Steven D. Tanksley 以及 Dr. Susan McCouch 研究室擔任博士後研究員，專長在數量性狀基因座(QTL)的定位分析與選殖、植物重要性狀的分子標誌建立與應用、以及基因體分析，回國後任職於中興大學農藝學系，主要研究方向除了重要作物 QTL 定位分析之外,近年來研究主要包括植物抗病毒基因的功能性分析;以及作物抗病基因座及其他重要農藝性狀基因座連鎖分子標誌之開發,目前主要研究主題為利用 VIGE 的編輯策略，進行植物抗病、耐非生物逆境及重要農園藝性狀之基因功能分析。

Research Interests:

For my post-graduate study, I specialize in studying map-based cloning of QTLs controlling fruit shape in tomato under the instruction of Dr. Steve Tanksley. As for my current research projects, I have focused on “Functional characterization of virus resistance genes in plants”. In addition, I have also worked in the applications of molecular markers in diverse plant species such as “genetic analysis on the male sterile systems (CMS and GMS) in pepper”, “genetic diversity analysis on rice, tomato, bamboo, basial and several herb species”, and “development of molecular markers for a bruchid (Callosobruchus chinensis L.) resistance genes and for MIMIV resistance in mungbean, and CAP and SACAR markers for

ZYMV resistance gene in squash. In addition, I am also interested in studying tissue culture and metabolic pathways of Chinese medical plants. Currently, my research interests are majorly focus on functional genetics in genes responsible for plant resistance, abiotic tolarence and those controlling economically important traits using VIGE(virus-induced genome editing) approach.

期刊論文

Publication List

1. 古新梅*。 2023。「分子標誌育種原理與技術介紹及應用」於專書「精準育種科技之應用及發展。第一章精準育種技術之介紹及應用」。pp5-21。2023年1月。教育部精準健康產業跨領域人才培育計畫精準農業教學推動中心出版。ISBN 978-986-96453-6-2。
2. Yen-Hsiang Huang, Hsin-Mei Ku, Chong-An Wang, Ling-Yu Chen, Shan-Syue He, Shu Chen, Po-Chun Liao, Pin-Yuan Juan, Chung-Feng Kao* (2022) A multiple phenotype imputation method for genetic diversity and core collection in Taiwanese vegetable soybean**.** Front Plant Sci . 13: 948349. doi: 10.3389/fpls.2022.948349 (accepted July 25th 2022) *The first authors are Yen-Hsiang Huang and Hsin-Mei Ku who equally contributed to this work. (SCI)
3. Jen-Ren Chen, Hiroki Ueno, Hideo Matsumura, Naoya Urasaki, Chen-Yu Lee, Fure-Chyi Chen, Shih-Wen Chin, Chun-Chi Liu, Chan-Tai Chiu, Kazuhiko Tarora, Jing-Yi Li, Chieh Ying Lee, and Hsin-Mei Ku* (2021) Genomic characterization of a rare Carica papaya X chromosome mutant reveals a candidate monodehydroascorbate reductase 4 gene involved in all-hermaphrodite phenomenon. Mol Gen Genet 296, 1323-1335 (accepted Sept. 11, 2020)(SCI) IF 3.291, Genetics & Heredity 91/176
4. Jen-Ren Chen, Shang-Ling Ou, Ting-Iun Nieh, Chih-Yu Lu, Hsin-Mei Ku* (2020) Molecular dissection of Cucumis metuliferus resistance against Papaya ringspot virus by grafting. Plants 9, 1666 (accepted Nov. 25, 2020)(SCI) IF 3.935 Plant Science 47/235
5. Shu-Yun Chen, Mei-Hsiu Su, Karl A. Kremling, Nicholas K. Lepak, M. Cinta Romay, Qi Sun, Peter J. Bradbury, Edward S. Buckler and Hsin-Mei Ku* (2020) Identification of miRNA-eQTLs in Maize Mature Leaf by GWAS. BMC Genomics 21:689 (accepted Sept. 10, 2020)(SCI) ISSN: 1471-2164, IF 3.969, 58/160, BIOTECHNOLOGY & APPLIED MICROBIOLOGY
6. Lee, C.-H., Zheng, Y.-X., Chan, C.-H., Ku, H.-M., Chang. C.-J., and Jan, Fuh-Jyh*. (2020). A single amino acid substitution in the movement protein enables the mechanical transmission of a geminivirus. Molecular Plant Pathology: 21:571-588 (accepted for publication on January 21, 2020) (SCI, IF=4.379, Plant Sciences 15/228= 6.6%).
7. 古新梅*。蔬菜作物分子育種之概論 2020 年 2 月。前瞻基因體學技術於農業領域之研發應用與展望。pp27-42。台大動植物農業產業窗新教育推動中心。ISBN 978-986-5452-17-9。

8. Jen-Ren Chen, Naoya Urasaki, Hideo Matsumura, I-Cheng Chen, Mei-Jiuan Lee, Hui-Ju Chang, Wen-Chuan Chung and Hsin-Mei Ku＊（2019） Dissecting the all-hermaphrodite phenomenon of a rare X chromosome mutant in papaya (Carica papaya L.). Mol Breed 39(1): 14 (SCI) 10.1007/s11032-018-0918-7. Horticulture 6/36 IF 1.862
9. Jen-Ren Chen, Shu-Hui Chen, Ju-Ling Lin and Hsin-Mei Ku* (2018) Advanced methylation-sensitivity amplified polymorphism analysis. Seed and Nursery (Taiwan) 18(2): 27-46 (accepted in Nov. 6, 2018) 甲基化敏感性擴增多型性分析技術之開發 18 卷 2 期， P27 - 46.
10. Wei-Ting Liu, Peng-Wen Chen, Li-Chi Chen, Chia-Chun Yang, Shu-Yun Chen, GuanFu Huang, Tzu-Che Lin, Hsin-Mei Ku* and Jeremy J.W. Chen* (2017) Suppressive Effect of MicroRNA319 Expression on Rice Plant Height. Theor Appl Genet 130(7):1507-1518 doi:10.1007/s00122-017-2905-5 (accepted in April, 2017)(SCI)
11. 古新梅*。王肇芬。 2015。分子輔助抗病育種 。種苗產業發展新趨勢研討會專刊。行政院台南區農業改良場出版。20151127。
12. Chia-Wei Lin, Mei-Hsiu Su, Yu-Tsung Lin, Chien-Hung Chung and Hsin-Mei Ku* (2015) Functional Characterization of Cucumis metuliferus Proteinase Inhibitor Gene (CmSPI) in Potyviruses Resistance. Viruses 7: 3816-3834; doi:10.3390/v7072799 July(SCI)
13. Chia-Wei Lin, Yi-Hua Lin, Yu-Tsung Lin, Wei-Chien Chen, Chien-Teh Chen, Shang-Ling Ou and Hsin-Mei Ku* (2014) Investigation of transgenic tobacco salt and drought tolerance in overexpression of horned melon serine proteinase inhibitor gene in tobacco plants. Crop Environment and Bioinformatics 11(4)
14. Chao-Chin Huang, Shang-Ling Ou, Chong-Zheng Lin, Sz-Yun Chen, Ju-Chieh Chou and Hsin-Mei Ku* (2014) Simulation study of genomic markers for Zucchini yellow mosaic virus Resistance in Winter Squash (Cucurbita moschata). Crop Environment and Bioinformatics 11: 26-38
15. Mulyantoro, Shang-Ling Ou, Shu-Yun Chen, Szu-Chien Liu, Tzu-Chuan Lo, Andi Wahyono, Sz-Yun Chen and Hsin-Mei Ku* (2014) Conversion of genic male sterility (GMS) system of bell pepper (Capsicum annuum L.) to cytoplasmic male sterility (CMS). Plant Breeding 133(2):291-297 (SCI)
16. Jo-Chu Chen, Yen-Chu Wang, Hsin-Pang Tsai, Shyh-Shyan Wang, Hung-Wei Wang, and Hsin-Mei Ku1* (2013) Molecular Genetic Characterization of Fruit Firmness and Thickness Loci in Tomato. J. Taiwan Soc. Hort. Sci. 59(3):219-229, 201
17. Yu-Tsung Lin, Fuh-Jyh Jan, Chia-Wei Lin, Tzu-Chuan Lo, Chien-Hung Chung, Jo-Chu Chen, Hsiang-Hao Su, Shy-Dong Yeh, and Hsin-Mei Ku* (2013) Differential Gene Expression in Response to Papaya ringspot virus Infection in Cucumis metuliferus using cDNA- Amplified Fragment Length Polymorphism Analysis. PLOSONE 8(7) e68749 July(SCI)
18. Shu-Yun Chen, Ting-Xuan Dai, Yuan-Tsung Chang, Shyh-Shyan Wang, Shang-Ling Ou, Wen-Ling Chuang, Chih-Yun Cheng, Yi-Hua Lin, Li-Yin Lin and Hsin-Mei Ku* (2013) Genetic diversity among Ocimum species based on ISSR, RAPD and SRAP markers. Austral J Crop Sci 7(10): 1463- 1471
19. Huei-Mei Chen, Hsin-Mei Ku, Roland Schafleitner, Tejinderjit S. Bains, C. George Kuo, Chien-An Liu, and Ramakrishnan M. Nair (2013) The major Quantitative Trait Locus for Mungbean yellow mosaic Indian virus resistance is tightly linked in repulsion phase to the major bruchid resistance locus in a cross

between mungbean [Vigna radiata (L.) Wilczek] and its wild relative Vigna radiata ssp. Sublobata. Euphytica July 2013, Volume 192(2) 205-216 (SCI)

20. Kuang-Ming Hsu, Jinn-Lai Tsai, Ming-Yih Chen, Hsin-Mei Ku*, Szu-Chien Liu* (2013) Molecular phylogeny of Dioscorea in East and Southeast Asia. Blumea - Biodiversity, Evolution and Biogeography of Plants, 58 (1): 21-27 (SCI)
21. Ching-Yi Lin, Hsin-Mei Ku, Yi-Hua Chiang, Hsiu-Yin Ho, Tsong-Ann Yu,and Jan, Fuh-Jyh*. (2012) Development of transgenic watermelon resistant to Cucumber mosaic virus and Watermelon mosaic virus by using a single chimeric transgene construct Transgenic Res : 21: 983-993*The authors Ching-Yi Lin and Hsin-Mei Ku equally contributed to this work. (SCI)
22. Hsin-Mei Ku, Chee-Wee Tan, Yen-Shuo Su, Chih-Yu Chiu, Chien-Teh Chen*, and Fuh-Jyh Jan* (2012) The effect of water deficienct and excess copper on proline metabolism in Nicotiana benthamiana. Biologia Plantarum 56(2): 337-343 (SCI)
23. Lin, C.-Y., Tsai, W.-S., Ku, Hsin-Mei, and Jan, Fuh-Jyh* (2012) Evaluation of DNA fragments covering the entire genome of a monopartite begomovirus for induction of viral resistance in transgenic plants via gene silencing. Transgenic Res 21(2): 231-241(SCI)
24. Hsin-Mei Ku, Chi-Chien Hu, Hui-Ju Chang, Fuh-Jyh Jan* and Chien-Teh Chen*(2011) Analysis by virus induced gene silencing of the expression of two proline biosynthetic pathway genes in Nicotiana benthamiana under stress condition. Plant Physiol & Biochem 49(10): 1147-1154 (SCI)
25. Yu-Tsung Lin, Chia-Wei Lin, Chien-Hung Chung, Mei-Hsiu Su, Hsiu-Yin Ho, Shi-Dong Yeh, Fuh-Jyh Jan*, and Hsin-Mei Ku* (2011) In Vitro Regeneration and Genetic Transformation of Cucumis metuliferus via Cotyledon Organogenesis. HortScience 46(4): 616-621 (SCI)
26. Ching-Yi LIN, Hsin-Mei KU, Chee-Wee TAN, Shyi-Dong YEH and Fuh-Jyh JAN (2011). Construction of the binary vector with bi-selectable markers for generating marker-free transgenic plants. Bot Stud, 52: 239-248(SCI)
27. Li, Charng-Pei, Huang Shou-Horng, Chen Jen-Ren, Tseng Tung-Hi, Lai Ming-Hsing and Hsin-Mei Ku* (2011) Molecular characterization of introgression lines from a wild rice, Oryza officinalis, with resistance to brown planthopper. J. Taiwan Agric. Res. 60: 263-278
28. Lin, Ching-Yi, Ku, Hsin-Mei, Tsai Wen-Shi, Green Sylvia K., and Jan, Fuh-Jyh (2011) Resistance to a DNA and a RNA virus in transgenic plants by using a single chimeric transgene construct. Transgenic Res. 20(2):261-270. (SCI)
29. Zhong-Bin Wu, Hsin-Mei Ku, Chiou-Chu Su, Iou-Zen Chen and Fuh-Jyh Jan* (2011) Molecular and biological characterization of an isolate of Apple stem pitting virus causing pear vein yellows disease in Taiwan. Journal of Plant Pathology 92:723-730. (SCI)
30. Shu-Yun Chen, Yu-Tsung Lin, Chia-Wei Lin, Wei-Yu Chen, Chih-Hung Yang, and Hsin-Mei Ku* (2010) Transferability of rice SSR markers to bamboo. Euphytica 175: 23-33 (SCI).
31. Wu, Zhong-Bin, Ku, Hsin-Mei, Chen, Yun-Kun, Chang Chung-Jan and Jan, Fuh-Jyh*. (2010). Biological and molecular characterization of Apple chlorotic leaf spot virus causing chlorotic leaf spot on pear (Pyrus pyrifolia) in Taiwan. HortScience 45: 1073-1078 (SCI)
32. Jen-Ren Chen, Hsin-Mei Ku, Jau-Yeuh Wang, and Min-Tze Wu. (2010). Exploitation and Characterization of EST-Derived Microsatellite Markers in Watermelon [Citrullus lanatus (Thunb.) Matsum & Nakai]. J. Taiwan Agric. Res. 58(4)310-315.

33. Chang, Ho-Hsiung, Ku, Hsin-Mei, Tsai, Wen-Shi, Chien Rui-Che, and Jan, Fuh-Jyh*. (2010) Identification and characterization of a mechanical transmissible begomovirus causing leaf curl on oriental melon. European Journal of Plant Pathology 127:219-228 (SCI)
34. Charn-Pei Li, Hsin-Mei Ku, Tzer-Kuan Hui, Chyr-Guan Chern, Ming-Hsing Lai, Ching-Shan Tseng, Jen-Ren Chen, and Tung-Hi Tseng. (2009) Construction of Intregression Lines from Wild Rice (Oryza australiensis Domin) and Assessment of Yield-Related Traits. J. Taiwan Agric. Res. 58:219-233.
35. Mulyantoro, Shu-Yun Chen, Andi Wahyono, and Hsin-Mei Ku* (2009) Modified complementation test of male sterility mutants in pepper (Capsicum annuum L.): preliminary study to convert male sterility system from GMS to CMS. Euphytica 169: 353-361(SCI).
36. Shen, B.-N., Zheng, Y. X., Chen, W. H., Chang, T. Y., Ku, Hsin-Mei, and Jan, Fuh-Jyh * (2009). Occurrence and molecular characterization of three pineapple mealybug wilt-associated viruses in pineapple in Taiwan. Plant Disease 93:196 (SCI)
37. Chang, H.-H., Ku, H.-M., and Jan, Fuh-Jyh*. (2009). Current progress and prospect of the reverse genetics of negative-strand RNA viruses. Plant Pathology Bulletin 18:201-216
38. Chang, H.-H., Tseng, H.-H., Yeh, S.-D., Ku, H.-M.* and Jan, Fuh-Jyh*. (2009). Generation of monoclonal antibody against the replicase of Watermelon silver mottle virus and its application on the detection of L protein expression in planta. Plant Pathology Bulletin 18: 237-246.
39. Lin, C.-Y., Tsai, W.-S., Ku, H.-M.*, and Jan, Fuh-Jyh*. (2009) Transgenic strategies for developing transgenic plants with geminivirus resistance. Plant Pathology Bulletin 18:185-200.
40. Huei-Mei Chen, Chien-An Liu, C. George Kuo, Ching-Mei Chien, Horng-Chi Sun, Chunh-Chu Huang, Yu-Chung Lin and Hsin-Mei Ku * (2007) Development of a molecular marker for a bruchid (Callosobruchus chinensis L.) resistance gene in mungbean. Euphytica 157: 113-122. (SCI)
41. Chong-Zheng Lin, Chang-Pei Li, Shu-Yun Cheng, Yu-Chung Lin, Ai-Na Hsu, Fu-Sheng Thseng, Shu-Tu Wu and Hsin-Mei Ku* (2007) Tagging QTL for Grain Quality Related Traits by Rice SSR Markers. Crop Environment and Bioinformatics 4: 269-284.
42. Meng-Huei Lin, Chia-Wei Lin, Jo-Chu Chen, Yu-Chung Lin, Shu-Yun Cheng, Tzung-Hua Liu, Fuh-Jyh Jan, Shu-Tu Wu, Fu-Sheng Thseng and Hsin-Mei Ku* (2007) Tagging Rice Drought-related QTL with SSR DNA Markers. Crop Environment and Bioinformatics 4(1): 65-76.
43. Doganlar S., Frary A., Hsin-Mei Ku, and S. D. Tanksley (2002) Mapping Quantitative Trait Loci in Inbred Backcross Lines of Lycopersicon pimpinellifolium (LA1589) Genome 45:1189-202. (SCI)
44. Jan, Fuh-Jyh and Ku, H.-M. (2001). Development of transgenic plants resistant to multiple viruses via gene silencing. Pages 239-250 in Proceedings of International Symposium on Biological Control of Plant Diseases for the New Century-Mode of Action and Application Technology. D. S. Tzeng and J. W. Huang, eds., Department of Plant Pathology, National Chung Hsing Univereisty Press, Taichung, Taiwan.
45. Ku Hsin-Mei, Liu J.P., Doganlar S., and Tanksley S. D. (2001) Exploitation of Arabidopsis-Tomato synteny to construct a high-resolution map of the ovate locus in tomato chromosome 2. Genome 44: 470-475. (SCI)

46. Ku Hsin-Mei, Vision T., Liu J. and Tanksley S. D. (2000) Comparing segments of the tomato and Arabidopsis genomes: Large-scale duplication followed by selective gene loss creates a network of synteny. Proc. Natl. Acad. Sci. USA 97(16): 9121-9126. (SCI)
47. Ku Hsin-Mei, S. Grandillo and S. D. Tanksley (2000) A major QTL, fs8.1, setting the pattern of tomato carpel shape well before anthesis. Theor. Appl. Genet. 101:873-878 (SCI)
48. Ku Hsin-Mei, S. Doganlar, K.-Y. Chen and S. D. Tanksley (1999) The genetic basis of pear-shaped tomato fruit. Theor. Appl. Genet. 99(5): 844-850 (SCI)
49. Grandillo S, Hsin-Mei Ku, S. D. Tanksley (1999) Identifying the loci responsible for natural variation in fruit size and shape in tomato. Theor. Appl. Genet. 99(6): 978-98. (SCI)
50. Ku Hsin-Mei, and S. D. Tanksley (1998) Round fruit allele of fs8.1 is associated with reduced incidence of blossom-end rot in tomato fruit. Tomato Genet. Coop. Report 48: 28-29.
51. Grandillo S, Hsin-Mei Ku, S. D. Tanksley (1996) Characterization of fs8.1, a major QTL influencing fruit shape in tomato. Molecular Breeding 2: 251-260. (SCI)
52. Ku, H. M. and H. S. Tsay. (1994). Effects of medium composition on the vitrification of carnation seedlings culture in vitro. Jour. Agric. Res. China 43:51-62.
53. Ku, H. M. and H. S. Tsay. (1994). Influence of subculture generation on the vitrification of carnation plantlets culture in vitro. Jour. Agric. Res. China 43:308-319.

Dissertation

Ku Hsin-Mei (1998) Ph. D. Department of Plant Biology, Cornell University, Ithaca, USA.

Dissertation: “Toward map-based cloning of fruit shape QTLs: a major QTL setting the pattern of carpel shape well before anthesis; genetic characterization and molecular mapping, high-resolution genetic and physical mapping of a major locus controlling pear-shaped fruit in tomato”.