

John Hu
College of Tropical Agriculture and Human Resources
(Department of Plant and Environmental Protection Sciences)
FTE Distribution: 15% I; 85% R

Education

<u>Degree</u>	<u>University</u>	<u>Major</u>
Bachelor's	Nanjing Agri Univ., China	Plant Protection
Master's	Cornell University, Ithaca, NY, USA	Plant Pathology
Ph.D,	Cornell University, Ithaca, NY, USA	Plant Pathology

Honors

Excellence in Research, 2005, CTAHR, UHM

Professional Appointments

<u>Title</u>	<u>Employer</u>	<u>Dates Employed</u>
Professor	University of Hawaii, Honolulu, HI	2002–present
Associate Professor	University of Hawaii, Honolulu, HI	1996–2002
Assistant Professor	University of Hawaii, Honolulu, HI	1990–1996
Research Associate	Cornell University, Geneva, NY	1987–1990

Courses Taught

PEPS 730 Plant Virology (2 credits, 2019)
PEPS 630 Plant Virology (4 credits, 1991 to 2015, every other Fall)
PEPS 606 Biology of Plant Pathogens (Viruses) (2 credits, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023)

Publications (reverse chronological order)

Book Chapters

Dey, K., Melzer M., and J. Hu 2018. Virus-Induced Gene Silencing *in* Plant Biotechnology, Volume 2: Transgenics, Stress Management, and Biosafety Issues.

Green, James, Wayne Borth, John S. Hu (2016) Engineering Resistance to Viruses. In: Mohandas S, Ravishankar KV (eds) Banana: genomics and transgenic approaches for genetic improvement. Springer, Singapore, pp 237-246

Martelli, G. P., Agranovsky, A. A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R. H. A.,

Dolja, V. V., Hu, J. S., Jelkmann, W., Karasev, A. V., Martin, R. R., Minafra, A., Namba, S., and Vetter, H. J. 2011. Family *Closteroviridae*, In: King A., Adams M.J., Carstens E.B., Lefkowitz E. (eds). Virus Taxonomy. Ninth Report of the International Committee on Taxonomy of Viruses, pp. 987-1001. Elsevier-Academic Press, Amsterdam, The Netherlands.

Refereed Journal Publications

Kong, A.T., Alejandro Olmedo-Velarde, A., Borth, W., Hu, J.S., and Melzer, M.J. 2023. Molecular and biological characterization of a novel tobamovirus infecting sunn hemp (*Crotalaria juncea* L.) in Hawaii. *Plant Disease* (*in Press*)

Wang, XP, Larrea-Sarmiento, A., Olmedo-Velarde, A., Kong, A., Borth, W., Suzuki, JY, Wall, MM, Melzer, MJ, Hu, JS. 2022. First detection and complete genome sequence of a new tobamovirus naturally infecting *Hibiscus rosa-sinensis* in Hawaii. *Archives of Virology* (2023) 168:40

Wang, XP, Larrea-Sarmiento, A., Olmedo-Velarde, A., Kong, A., Borth, W., Suzuki, JY, Wall, MM, Melzer, MJ, Hu, JS. 2023. First Detection and Genome Characterization of a New RNA Virus, Hibiscus Betacarmovirus, and a New DNA Virus, Hibiscus Soymovirus, Naturally Infecting *Hibiscus* spp. in Hawaii. *Viruses* 2023, 15, 90. <https://doi.org/10.3390/v15010090>

Hamim I, Suzuki JY, Borth WB, Melzer MJ, Wall MM, Hu JS. 2022. Preserving plant samples from remote locations for detection of RNA and DNA viruses. *Front. Microbiol.* 2022 Aug 25; 13:930329. doi: 10.3389/fmicb.2022.930329.

Larrea-Sarmiento A, Olmedo-Velarde A, Wang X, Borth W, Domingo R, Matsumoto TK, Suzuki JY, Wall MM, Melzer M, Hu JS. 2022. Genetic Diversity of viral populations associated with ananas germplasm and improvement of virus diagnostic protocols. *Pathogens* 2022, 11, 1470. <https://doi.org/10.3390/pathogens11121470>

Larrea-Sarmiento A, Geering ADW, Olmedo-Velarde A, Wang X, Borth W, Matsumoto TK, Suzuki JY, Wall MM, Melzer M, Moyle R, Sharman M, Hu JS, Thomas JE. 2022. Genome sequence of pineapple secovirus B, a second sadwavirus reported infecting *Ananas comosus*. *Arch. Virol.* 2022 Oct 21. doi: 10.1007/s00705-022-05590-9.

Olmedo-Velarde, Alejandro, Avijit Roy, Adriana Larrea-Sarmiento, Xupeng Wang, Chellappan Padmanabhan, Schyler Nunziata, Mark K. Nakhla, John Hu, and Michael J. Melzer. 2022. First Report of the Hibiscus Strain of Citrus Leprosis Virus C2 Infecting Passionfruit (*Passiflora edulis*). *Plant Disease* <https://doi.org/10.1094/PDIS-10-21-2314-PDN>

Olmedo-Velarde A, Loristo J, Kong A, Waisen P, Wang KH, Hu JS, Melzer M. 2022. Examination of the virome of taro plants affected by a lethal disease, the alomae-bobone virus complex, in Papua New Guinea. *Viruses*. 2022 Jun 28;14(7):1410. doi: 10.3390/v14071410.

Wang, Xupeng, Adriana Larrea-Sarmiento, Alejandro Olmedo-Velarde, Wayne Borth, Jon Y Suzuki, Marisa M Wall, Michael Melzer, Hu, JS. 2022. Complete genome organization and

characterization of Hippeastrum latent virus. *Virus Genes*, 2022 Aug. 58(4):367-371.

Wang, Xupeng, Adriana Larrea-Sarmiento, Alejandro Olmedo-Velarde, Rwahnih, M.A., Wayne Borth, Jon Y Suzuki, Marisa M Wall, Michael Melzer, Hu, JS. 2022. Survey of viruses infecting *Basella alba* in Hawaii. *Plant Disease* 2022 Sep. 27. doi: 10.1094/PDIS-02-22-0449-SR.

Wu, Biyu, Hu, J.S. Li, Y. 2022. Development of an ultra-sensitive single-tube nested PCR assay for rapid detection of *Campylobacter jejuni* in ground chicken. *Food Microbiol.* 2022 Sep. 106:104052 doi: 10.1016/j.fm.2022.104052.

Adriana Larrea-Sarmiento, Alejandro Olmedo-Velarde, Xupeng Wang, Wayne Borth, Tracie K Matsumoto, Jon Y Suzuki, Marisa M Wall, Michael Melzer, John Hu. 2021. Novel ampelovirus associated with mealybug wilt of pineapple (*Ananas comosus* var. *comosus*). *Virus Genes*. <https://doi.org/10.1007/s11262-021-01852-x>

Alejandro Olmedo Velarde, Philip Waisen, Alexandra T. Kong, Koon Hui Wang, John S. Hu, and Michael J Melzer. 2021. Characterization of taro reovirus and its status in taro (*Colocasia esculenta*) germplasm from the Pacific. *Archives of Virology* DOI: [10.1007/s00705-021-05108-9](https://doi.org/10.1007/s00705-021-05108-9)

Alejandro Olmedo-Velarde, John Hu, Michael J. Melzer. 2021 A Virus Infecting *Hibiscus rosa-sinensis* Represents an Evolutionary Link Between Cileviruses and Higreviruses. *Frontiers in Microbiology* <https://doi.org/10.3389/fmicb.2021.660237>

Jens H. Kuhn, Scott Adkins, Bernard R. Agwanda, Rim Al Kubrusli, John S. Hu, Zhe Zhang, Xueping Zhou. 2021. Taxonomic update of phylum Negarnaviricota (Riboviria: Orthornavirae), including the large orders Bunyavirales and Mononegavirales. *Archives of Virology* <https://doi.org/10.1007/s00705-021-05143-6>

Xupeng Wang, Alejandro Olmedo-Velarde, Adriana Larrea-Sarmiento, Anne E. Simon, Alexandra Kong, Wayne Borth, Jon Y Suzuki, Marisa M Wall, John Hu*, Michael Melzer. 2021. Genome characterization of fig umbra-like virus. *Virus Genes* <https://doi.org/10.1007/s11262-021-01867-4>

Alejandro Olmedo-Velarde, Beatriz Navarro, John S. Hu, Michael J. Melzer, and Francesco Di Serio. 2020. Novel fig-associated viroid-like RNAs containing hammerhead ribozymes in both polarity strands identified by high-throughput sequencing. *Frontiers in Microbiology* doi: 10.3389/fmicb.2020.01903

Islam Hamim, Wayne B. Borth, Jon Y. Suzuki, Michael J. Melzer, Marisa M. Wall, and John S. Hu. 2020. Molecular characterization of tomato leaf curl Joydebpur virus and tomato leaf curl New Delhi virus associated with severe leaf curl symptoms of papaya in Bangladesh *Eur J Plant Pathol* 158:457–472

Larrea-Sarmiento, A., Alejandro Olmedo-Velarde, James C. Green, Maher Al Rwahnih, Xupeng Wang, Yun-He Li, Weihuai Wu, Jingxin Zhang, Tracie Matsumoto Brower, Marisa Wall and

John S. Hu 2020, Identification and complete genomic sequence of a novel sadwavirus discovered in pineapple (*Ananas comosus*) Archives of Virology <https://doi.org/10.1007/s00705-020-04592-9>

Green, J.C., Rwahnih, M.A., Olmedo-Velarde, A., Melzer, M.J., Hamim, I., Borth, W.B., Brower, T.M., Wall, M. and Hu, J.S., 2020. Further genomic characterization of pineapple mealybug wilt-associated viruses using high-throughput sequencing. *Tropical Plant Pathology* 45:64-72

Olmedo-Velarde, Alejandro, Adam C., Park, Jari Sugano, Janice Y. Uchida, Michael Kawate, Wayne B. Borth, John S. Hu, and Michael J. Melzer 2019. Characterization of Ti ringspot-associated virus, a novel emaravirus associated with an emerging ringspot disease of *Cordyline fruticosa* (L.) *Plant Disease* <https://doi.org/10.1094/PDIS-09-18-1513-RE>

Hamim, I., Maher Al Rwahnih, Wayne B. Borth, Jon Y. Suzuki, Michael J. Melzer, Marisa M. Wall, James C. Green, and John S. Hu 2019 Papaya ringspot virus isolates from papaya in Bangladesh: detection, characterization and distribution. *Plant Disease* (*in press*)

Wang, D., Boluk, G., Quinto, E.A., Hamim, J. C. Green, W. B. Borth, M. J. Melzer, Suzuki, J., M. M. Wall, M.M., Matsumoto, T., G. F. Sun, and J. S. Hu, 2019. First Report of Zucchini tigre mosaic virus infecting Bitter Melon (*Momordica charantia*) in Hawaii. *Plant Disease* <https://doi.org/10.1094/PDIS-08-18-1391-PDN>

Hamim, I., Wayne B. Borth, Michael J. Melzer, Jon Y. Suzuki, Marisa M. Wall, John S. Hu. 2019. Occurrence of tomato leaf curl Bangladesh virus and associated subviral DNA molecules in papaya in Bangladesh: molecular detection and characterization. *Archives of Virology* 164:1661-1665

Feng, X., Orellana, G., Green, J., Melzer, M.J., Hu, J.S., and Karasev, A.V. 2019. A new strain of Bean common mosaic virus from lima bean (*Phaseolus lunatus*): biological and molecular characterization. *Plant Disease* <https://doi.org/10.1094/PDIS-08-18-1307-RE>

Kishore Dey*, James C Green*, Michael Melzer, Wayne Borth, John Hu. 2018. Mealybug Wilt of Pineapple and Associated Viruses. *Horticulture*. 4(4);52.

Wang, D., Ocenar J., I. Hamim, J. C. Green, W. B. Borth, M. J. Melzer, Suzuki, J., M. M. Wall, M.M., Matsumoto, T., G. F. Sun, and J. S. Hu, 2018. First Report of Bean yellow mosaic virus Infecting *Nasturtium* (*Tropaeolum majus*) in Hawaii. *Plant Disease* <https://doi.org/10.1094/PDIS-06-18-1082-PDN>.

Wang, D., I. Hamim, J. C. Green, W. B. Borth, M. J. Melzer, Suzuki, J., M. M. Wall, M.M., Matsumoto, T., G. F. Sun, and J. S. Hu, 2018. First Report of Apple of Peru (*Nicandra physalodes*) Infected with Pepper mottle virus in Hawaii. *Plant Disease* <https://doi.org/10.1094/PDIS-06-18-1061-PDN>.

Zhang, J., John Hu, Huifang Shen, Yucheng Zhang, Dayuan Sun, Xiaoming Pu, Qiyun Yang, Qiurong Fan, and Birun Lin. 2018. Genomic analysis of the *Phalaenopsis* pathogen *Dickeya* sp. PA1, representing the emerging species *Dickeya fangzhongdai*. *BMC Genomics* (2018) 19:782 <https://doi.org/10.1186/s12864-018-5154-3>

Zhang, J., Borth, W.B., Sether, D., Lin, B, Melzer, M.J., Shen, H., Pu, X, Sun, D., Nelson, S., Hu, J.S. 2018. Multiplex Detection of Three Banana Viruses by Reverse Transcription Loop-mediated Isothermal Amplification (RT-LAMP). *Tropical Plant Pathology* 43:543–551.

Dey, Kishore, Milena Leite, John Hu, Jordan Ramon, and Mike Melzer 2018. Detection of Jasmine virus H and characterization of a second pelarspovirus infecting star jasmine (*Jasminum multiflorum*) and angelwing jasmine (*J. nitidum*) plants displaying virus-like symptoms. *Archives of Virology* <https://doi.org/10.1007/s00705-018-3947-y>

Hamim, Islam, Wayne B. Borth, Josiah Marquez, James C. Green, Michael J. Melzer, John S. Hu 2018 Transgene-mediated resistance to Papaya ringspot virus: challenges and solutions *Phytoparasitica* <https://doi.org/10.1007/s12600-017-0636-4>

Hamim, I., Wayne Borth, Michael J. Melzer, and John Hu. 2018. Ultra-sensitive detection of Papaya ringspot virus using single-tube nested PCR. *Acta Virologica* 62: 379 – 385.

Wang, D., I. Hamim, J. C. Green, W. B. Borth, M. J. Melzer, and J. S. Hu. 2018. First Report of Dasheen mosaic virus infecting Taro (*Colocasia esculenta*) in Bangladesh. *Plant Disease* <https://doi.org/10.1094/PDIS-03-18-0442-PDN>.

Green, J. and Hu. J.S. 2017. Editing Plants for Virus Resistance Using CRISPR-Cas. *Acta Virologica* 61: 138 – 142.

Green, J.C., Borth, W.B., Melzer, M.J., Wang, Y.N., Hamim, I., and Hu, J.S. 2017. First Report of Bean common mosaic virus infecting *Phaseolus lunatus* in Hawaii. *Plant Disease* 101:1557.

Hamim, I., J. C. Green, W. B. Borth, M. J. Melzer, Y. N. Wang, and J. S. Hu. 2017. First Report of Banana bunchy top virus in *Heliconia* spp. on Hawaii. 2017, Volume 101: 2153

Li, Y., Wang, Y., Hu, J., Xiao, L., Tan, G., Lan, P., Liu, Y., and Li, F. 2017. Molecular and biological characteristics of Tomato mottle mosaic virus Chinese isolate. *Virology Journal* 14:15-23.

Li Q, Xu Y, Zhu M, Dong Y, Hu J, Li Y, Liu Y. 2017. Genetic diversity of the nucleocapsid protein gene of *hippeastrum chlorotic ringspot virus* from *Hymenocallis littoralis* in southern China. *Acta Virol.* 61(1):116-122.

Wang, Y. N., Wu, B.L., Borth, W. B., Hamim, I., Green, J.I., Melzer, M.J., and Hu, J.S. 2017. Molecular Characterization and Distribution of Two Strains of Dasheen mosaic virus on Taro in Hawaii. *Plant Disease* 101:1980-1989.

Wang, Y. N., Borth, W. B., Hamim, I., Green, J.I., Melzer, M.J., and Hu, J.S. 2017. First Report of Taro bacilliform CH Virus (TaBCHV) on Taro (*Colocasia esculenta*) in Hawaii. *Plant Disease* 101:1334.

Wang, Y.N., Melzer, M., Borth, W., Green, J. Hamim, I., and Hu, J.S. 2017. First report of Bean yellow mosaic virus in vanilla in Hawaii. *Plant Disease* 101:1557.

Wang, Y. N., Borth, W. B., Hamim, I., Green, J.I., Keqiang Cao, J.S. Hu, and Melzer, M.J. 2017. Genome characterization and distribution of Taro bacilliform CH virus on taro in Hawaii, USA *Eur J Plant Pathol* <https://doi.org/10.1007/s10658-017-1353-z>

Xu, Y., Xue Gao, Zhiqiang Jia, and Wengui Li, John Hu, Yajin Li, Yongzhong Li, and Yating Liu. 2017. Identification of *Taeniothrips eucharii* (Thysanoptera: Thripidae) as a Vector of *Hippeastrum chlorotic ringspot virus* in Southern China. *Plant Disease* 101:1597-1600.

Zhang, J., Jingxin Zhang, Kishore K. Dey, Birun Lin, Wayne B. Borth, Michael J. Melzer, Diane Sether, Yanan Wang, I-Chin Wang, Huifang Shen, Xiaoming Pu, Dayuan Sun, and 2017. Characterization of *Canna yellow mottle virus* in a new host, *Alpinia purpurata*, in Hawaii. *Phytopathology* 107:791-799.

Zhang, J., Borth, W.B., Sether, D., Wang, I., Lin, B, Melzer, M.J., Shen, H., Pu, X, Nelson, S., Hu, J.S. 2016. Deep Sequencing of Banana Bract Mosaic Virus from Flowering Ginger (*Alpinia purpurata*) and Development of an Immunocapture RT-LAMP Detection Assay. *Arch. Virol* 161(7):1783-1795.

Liu, T, Hou, J., Borth, W., Hu, J.. Zuo, Y. 2016. Genome-wide identification, classification and expression analysis in fungal–plant interactions of cutinase gene family and functional analysis of a putative *CICUT7* in *Curvularia lunata*. *Mol Genet Genomics* 291:1105–1115.

Zhang, J., Borth, W.B., Sether, D., Wang, I., Lin, B, Melzer, M.J., Shen, H., Pu, X, Nelson, S., Hu, J.S. 2016. Deep Sequencing of Banana Bract Mosaic Virus from Flowering Ginger (*Alpinia purpurata*) and Development of an Immunocapture RT-LAMP Detection Assay. *Arch. Virol* 161(7):1783-1795.

Xu, Y., Wang, S., Li, Y., Tao, H., Huang, Y., Wu, B., Dong, Y., Hu, J., Liu, Y. 2016. Complete genome sequence of a distinct *Calla lily chlorotic spot virus* isolated from Mainland China. *Arch. Virol.* 161:219-222.

Watanabe, S., Ruschel, R., Marrero, G., Sether, D., Borth, W., Hu, J., and Melzer, M. 2016. A distinct lineage of *Watermelon mosaic virus* naturally infects honohono orchid (*Dendrobium anosmum*) and passionfruit (*Passiflora edulis*) in Hawaii. *New Disease Reports* 34:13.

Liu, T, Hu, J. Zuo, Y., Jin, Y., Hou, J 2015. Identification of microRNA-like RNAs from *Curvularia lunata* associated with maize leaf spot by bioinformation analysis and deep sequencing. *Mol Genet Genomics* DOI 10.1007/s00438-015-1128-1

Dey, K. Borth, W.B., Melzer M.J., Wang, M.L., Hu, J.S. 2015 Analysis of Pineapple mealybug

wilt associated virus -1 and -2 for potential RNA silencing suppressors and pathogenicity factors. *Viruses* 7:969-995.

Dey, K. Borth, W.B., Melzer M.J., Hu, J.S. 2015 Application of Circular Polymerase Extension Cloning to Generate Infectious Clones of a Plant Virus. *Journal of Applied Biotechnology* 3:34-44.

Long, M.H., C. Ayin, R. Li, J. S. Hu, and M. J. Melzer, 2014. First report of taro vein chlorosis virus infecting taro [*Colocasia esculenta* (L.) Schott] in the United States of America. *Plant Disease* 98:1160.

Melzer MJ. Shimabukuro, JK., Long, M., Nelson, S., Alvarez, A., Borth, WB, Hu, JS. 2014. First report of Capsicum chlorosis virus infecting waxflower (*Hoya calycina* Schlechter) in the United States of America. *Plant Disease* 98:571.

Zhang, J., Shen, H., Pu, X., Lin, B., and Hu, JS. 2014 Identification of *Dickeya zeae* as a Causal Agent of Bacterial Soft Rot in Banana in China. *Plant Dis.* 98:436-442.

Melzer MJ, Ayin, C., Sugano, JS, Uchida, JY, Kawate, MK, Borth, WB, Sether, DM, Hu, JS. 2013. Differentiation and Distribution of Cordyline Viruses 1–4 in Hawaiian ti Plants (*Cordyline fruticosa* L.) *Viruses* 5:1655-1663.

Melzer, MJ, Simbajon, N., Carillo, J., Borth, WB, Freitas-Astúa, J., Kitajima, EW, Neupane, K.R., Hu, JS. 2013. A cilevirus infects ornamental hibiscus in Hawaii. *Arch. Virol.* Doi:10.1007/s00705013-1745-0

Melzer, MJ, Sugano, JS, Uchida, JY, Kawate, MK, Borth, WB, Sether, DM, Hu, JS. 2013. Molecular characterization of closteroviruses infecting *Cordyline fruticosa* (L.) in Hawaii. *Frontiers in Microbiology* 4:39 (doi: 10.3389/fmicb.2013.00039)

Dey, K., Lin, H., Borth, W., Melzer, M., Hu, J., 2012. A highly sensitive single-tube nested PCR assay for the detection of Pineapple mealybug wilt associated virus (PMWaV-2). *Journal of virological methods* 183, 215-218.

Melzer, M. J., Sether, D.M., Borth, W.B., and Hu, J.S. 2012. Characterization of a virus infecting *Citrus volkameriana* (Ten. & Pasq.) with citrus 2 leprosis-like symptoms. *Phytopathology* 102: 122-127.

Sether, D.M., Melzer, M. J., Borth, W.B., and Hu, J.S. 2012. Characterization, Diversity, Distribution, and Transmission of a Pineapple Badnavirus in Commercial Pineapple Hybrids and Pineapple Germplasm Accessions in Hawaii. *Plant Disease* 96:1798-1804.

Martelli, G.P., N. Abou Ghanem-Sabanadzovic, A.A. Agranovsky, M. Al Rwahnih, V.V. Dolja, C.I. Dovas, M. Fuchs, P. Gugerli, J.S. Hu, W. Jelkmann, N.I. Katis, V.I. Maliogka, M.J. Melzer, Saldarelli, P. 2012. Taxonomic revision of the family Closteroviridae with special reference to the grapevine leafroll-associated members of the genus Ampelovirus and the putative species

unassigned to the family. *Journal of Plant Pathology* (2012), 94 (1), 7-19.

Melzer, M. J., Sugano, J.S., Cabanas, D., Dey, K., Kandouh, B., Mauro, D., Rushanaedy, I., Srivastava, S., Watanabe, S., Borth, W.B., Tripathi, S., Mastsumoto, T., Keith, L., Gonsalves, D., and Hu, J.S. 2012. First report of Pepper mottle virus on Tomato in Hawaii *Plant Dis.* 96:917

Borth, W., Perez, E., Cheah, K., Chen, Y., Xie, W.S., Gaskill, D., Khalil, S., Sether, D., Melzer, M., Wang, M., Manshardt, R., Gonsalves, D. and Hu, J.S. 2011. Transgenic banana plants resistant to banana bunchy top virus. *Acta Hort. (ISHS)* 897:449-457

Ma, H., Song, C. F., Borth, W., Sether, D., Melzer, M., and J.S. Hu. 2011. Modified Expression of Alternative Oxidase in Transgenic Plants Affects Tomato Spotted Wilt Virus Resistance. *BMC Biotechnology* 11:96 <http://www.biomedcentral.com/1472-6750/11/96>

Melzer, M. J., Sether, D.M., Borth, W.B., Mersino, E.F., and Hu, J.S. 2011. An assemblage of closteroviruses infects Hawaiian ti (*Cordyline fruticosa* L.). *Virus Genes* 42:254-260.

Subere, C.V.Q., Sether, D.M., Borth, W.B., Melzer M.J., and Hu, J.S. 2011 Detection and absolute quantification of Pineapple mealybug wilt-associated virus-2 in pineapple using real-time RT-PCR (TaqMan[®]) assays. *Acta Hort. (ISHS)* 902:349-356.

Subere, C.V.Q., Sether, D.M., Borth, W.B., Melzer M.J., and Hu, J.S. 2011 Transmission characteristics of Pineapple mealybug wilt-associated virus-2 by the grey pineapple mealybugs *Dysmicoccus neobrevipes* in Hawaii. *Acta Hort. (ISHS)* 902:393-402.

Zhou, T., Nelson, S. C., Hu, J. S., Wang, L., Fan, Y., Cheng, Z. and Zhou, Y. 2011. Inheritance and Mechanism of Resistance to Rice Stripe Disease in cv. Zhendao 88, a Chinese Rice Cultivar. *Journal of Phytopathology*, 159: 159–164.

Melzer, M.J., Ogata, D., Fukuda, S.K., Shimabuku, R., Borth, W.B., Sether, D. M., and Hu, J.S. 2010. First report of Tomato yellow leaf curl virus in Hawaii. *Plant Dis.* 94:641.

Melzer, M.J., Borth, W.B., Sether, D.M., Ferreira, S., Gonsalves, D. and Hu, J.S. 2010. Genetic diversity and evidence for recent modular recombination in Hawaiian Citrus tristeza virus. *Virus Genes* 40:111-118

Sether, D. M., Borth, W. B., Melzer, M. J., and Hu, J. S. 2010. Spatial and temporal incidences of Pineapple mealybug wilt associated viruses in pineapple planting blocks. *Plant Dis.* 94:196-200

Sether, D. M., Borth, W.b., Shimabuku, R.S., Pappu, H.R., Melzer, M.J. and Hu, J.S. 2010. First Report of Iris yellow spot virus in onion in Hawaii. *Plant Dis.* 94:1508.

Wang, I.C., Sether, D.M., Melzer, M.J., Borth, W.B., and Hu, J.S. 2010. First Report of Banana bract mosaic virus in Flowering Ginger, *Alpinia purpurata*, in Hawaii. *Plant Dis.* 94:921.

Hu, J.S., Sether, D.M., Melzer, M.J., Subere, C.V., Cheah, K., Chen, Y., Qi L., Borth, W., Wang,

I.C., Nagai, C. and Wang, M.L. 2009. Characterization and management of pineapple mealybug wilt associated viruses. *Acta Hort. (ISHS)* 822:185-190.

Liang X.L., Chen, X.L., Cheah, K., Sether, D., Li, Q., and Hu, J.S. 2009. Establishment of direct somatic embryogenesis system through transverse thin cell layer culture in pineapple (*Ananas comosus* L. Merrill). *Acta Horticulturae Sinica* 36:1597-1602.

Sether, D. M., Melzer, M.J., Borth, W.B., and Hu, J.S. 2009. Genome organization and phylogenetic relationship of Pineapple mealybug wilt associated virus-3 with other family *Closteroviridae* members. *Virus Genes* 38:414-420.

Wang, M.L., Uruu G., Xiong L.W., He X. L., Nagai C., Cheah K. T., Hu J. S., Nan G.L., Sipes B.S., Atkinson, H.J., Moore, P. H., Rohrbach, K.G., Paull R.E. 2009. Production of transgenic pineapple plants via adventitious bud regeneration. *In Vitro Plant, Cellular and Developmental Biology* 45:112-121.

Wu, A.M., Hu, J.S., and Liu, J.Y. 2009. Functional analysis of a cotton cellulose synthase A4 gene promoter in transgenic tobacco plants. *Plant Cell Reports* 28:1539-1548.

Tichaona Mangwende, T., Wang, M.-L., Borth, W., Hu, J.S., Moore, P. H., Mirkov, T. E., Albert, H. H. (2008) The P0 gene of Sugarcane yellow leaf virus encodes an RNA silencing suppressor with novel activities. *Virology* 384:38-50.

Jiang, B., Hong, N., Wang, G.P., Hu, J.S., Zhang, J.K., Wang, C.X., Liu, Y., Fan, X.D. 2008. Characterization of Citrus tristeza virus strains from southern China based on analysis of restriction patterns and sequences of their coat protein genes. *Virus Genes* 37:185-192.

Kamo, K., Jordan, R.L., Hsu, H-T., and Hu, J.S. 2008. Antibodies in plants. *Floriculture, Ornamental and Plant Biotechnology*. 5:311-318.

Melzer, M.J., Sether, D.M., Karasev, A.V., Borth, W., and Hu, J.S. 2008. Complete nucleotide sequence and genome organization of Pineapple mealybug wilt-associated virus-1. *Arch. Virol.* 153:707-714.

Wang, X.Y., Song, C.F., Miao, W.G., Ji, Z.L., Zhang Y., Zhang, J.H., Hu, J.S., Borth, W., Wang, J.S. 2008 Mutations in the N-terminal coding region of *hpa1* from *Xanthomonas oryzae* cause loss of hypersensitive reaction induction on tobacco. *Applied Microbiology and Biotechnology* 81:359-369

Liu, F.X., Ruan, X.L., He, Y.W., Li, H.P., and Hu, J.S. 2007. Complete nucleotide sequence of Rice gall dwarf virus genome segment S7. *Arch. Virol.* 152: 1233-1235.

Aebig, J.A., Albert, H.H., Zhu, B.L., Hu, J.S., and Hsu, H.T. 2006. Cloning and construction of single-chain Variable Fragments (scFv) to Cucumber mosaic virus and production of transgenic plants. *Acta Hort.* 722: 129-136.

Borth, W.B., Fukuda, S.K., Hamasaki, R.T., Hu, J.S., and Almeida, R.P.P. 2006. Detection and

initial characterization of watercress yellows phytoplasma and its leafhopper vector in Hawaii. *Ann. Appl. Biol.* 149:357-363.

Borth, W.B., Barry, K., Obsuwan, K., Xu, M.Q., Liu, R.W., Kuehnle, A.R., and Hu, J.S., 2006. Movement of Cymbidium Mosaic Virus and Transgenic Resistance in Dendrobium Orchids. *Acta Hort.* 722: 137-146.

Melzer, M. J., Borth, W.B., Zee, F., Hilf, M.E., Garnsey, S.M., and Hu, J.S. 2006. Incidence, distribution, and diversity of Citrus tristeza virus in the Hawaiian Islands. In: *Proc. 16th Conf. IOCV* pages 179-186.

Perez, E. P., Sether, D. M., Melzer, M. J., Busto, J. L., Nagai, C., and Hu, J. S. 2006. Characterization and control of pineapple mealybug wilt associated Ampeloviruses. *Acta Hort.* 702: 23-27.

Xu, M.Q., Li, H.P., Wang M., Borth, W.B., Hsu, H.T. and Hu, J.S. 2006. Transgenic plants expressing a single-chain FV antibody to Tomato spotted wilt virus are resistant to TSWV systemic infection. *Acta Hort.* 722:337-348.

Qiu, X.H., Guan, P.Z., Wang, M.L., Moore P.H., Zhu, J., Hu, J.S., Borth, W., and Albert, H.H. 2005. Sensitive, reproducible quantitative expression analysis of BTH-induced genes in papaya. *Physiological and Molecular Plant Pathology* 65:21-30.

Sether, D. M., Melzer, M. J., Busto, J. L., Zee, F., and Hu, J. S. 2005. Diversity and mealybug transmissibility of Pineapple mealybug wilt associated viruses found in pineapple. *Plant Dis.* 89:450-456.

Huang, J.G., Fan, Z.F., and Li, H.F., Tian, G.Z., and Hu, J.S. 2004. First report of Tomato mosaic virus on Hibiscus rosa-sinensis in China. *Plant Disease* 88:683.

Song, C.F., Borth W., Wang, J.S., Hu J.S. 2004. Cloning and Expression of an Alternative Oxidase Gene from *Lycopersicon esculentum* J. of *Plant Physiology and Molecular Biology* 30 (5): 503-510.

Vetten, H.J., Chu, P.W.G., Dale, J.L., Harding, R., Hu, J., Katul, L., Kojima, M., Randles, J.W., Sano, Y. and Thomas, J.E. (2004). Nanoviridae. In: *Virus Taxonomy, VIIIth Report of the ICTV* (C.M. Fauquet, M.A. Mayo, J. Maniloff, U. Desselberger, and L.A. Ball, eds.), 343-352. Elsevier/Academic Press, London.

Mauch, H., Melzer, M. J., and Hu, J.S. 2003. Genetic algorithm approach for the closest string problem. In: *Computational Systems Bioinformatics*, pp. 560-561.

Zhu, Y.J., Qiu, Q., Moore, P.H., Borth, W., Hu, J.S., Ferreira, S., and Albert, H.H. 2003. Systemic acquired resistance induced by BTH in papaya. *Physiological and Molecular Plant Pathology* 63: 237-248.

- Borth, W.B., Hamasaki, R.T., Ogata, D., Fukuda, S. K., and Hu, J.S. 2002. First report of phytoplasmas infecting watercress in Hawaii. *Plant Dis.* 86:331.
- Khalil, S.M., Cheah, K.T., Perez, E., and Hu, J.S. 2002. Efficient regeneration of banana (*Musa* spp. ABB cv. Apple) via secondary somatic embryogenesis using immature male flower bud explants. *Plant Cell Reports* 20:1128-1134.
- Sether, D.M., and Hu, J.S. 2002. Closterovirus infection and mealybug exposure are both necessary factors for the development of mealybug wilt of pineapple disease. *Phytopathology* 92: 928-935.
- Sether, D.M., and Hu, J.S. 2002. Impact of pineapple mealybug wilt associated virus-2 and mealybug wilt of pineapple in Hawaii. *Plant Dis.* 86: 867-874.
- Sipes, B.S., Sether, D.M., and Hu, J.S. 2002. Interactions between *Rotylenchus reniformis* and pineapple mealybug wilt associated virus-1 on pineapple. *Plant Dis.* 86: 933-938.
- Borth, W., Jones, V.P., Ullman, D.E., and Hu, J.S. 2001. Effects of synthetic cecropin analogs on *in vitro* growth of *Acholeplasma laidlawii*. *Antimicrobial Agents Chemo.* 45: 1894-1895.
- Melzer, M.J, Karasev, A.V., Sether, D.M., and Hu, J.S. 2001. Nucleotide sequence, genome organization, and phylogenetic analysis of pineapple mealybug wilt-associated virus-2. *J. Gen. Virol.* 82: 1-7.
- Sether, D. and Hu, J.S. 2001. The impact of pineapple mealybug wilt-associated virus and reduced irrigation on pineapple yield. *Australasian Plant Pathol.* 30: 31-36.
- Sether, D.M., Okumura, C., Kislán, M.M., Busto, J.L., Arakawa, C., Zee, F., Karasev, A.V., and Hu, J.S. 2001. Differentiation, distribution, and elimination of two different pineapple mealybug wilt associated viruses found in pineapple. *Plant Dis.* 85: 856-864.
- Jones, V.P., Anderson-Wong, P., Follett, P.A., Yang, P., Westcot, W., Hu, J.S., and Ullman, D. 2000. Feeding damage of the introduced leafhopper *Sophonia rufofascia* (Homoptera: Cicadellidae) to plants in forests and watersheds of the Hawaiian Islands. *Environ. Entomol.* 29: 171-177.
- Pang, S. Z., Jan, F.J., Tricoli, D.M., Russell, P.F., Carney, K.J., Hu, J.S., Fuchs, M., Quemada, H.D., and Gonsalves, D. Resistance to squash mosaic comovirus in transgenic squash plants expressing its coat protein genes. 2000. *Molecular Breeding* 6: (1) 87-93.
- Xiao, H.G. Hu, J.S., and Fan, H.Z. 2000. Detection of papaya ringspot virus by immuno-capture PCR, nested-PCR and ELISA-PCR assays. *Virologia Sinica* 15:367-372.
- Borth, W.B., Jones, V.P., Ullman, D.E., Zee, F., and Hu, J.S. 1999. Elimination of phytoplasma

as causal agents of macadamia quick decline and nonripening of papaya. *Trop. Agric.* 76:36-44.

Randles, J.W., Chu, P.W.G., Dale, J.L., Harding, R., Hu, J.S., Katul, L., Kojima, M., Makkouk, K.M., Sano, Y., Thomas, J.E., and Vetten, H.J. 1999. Nanovirus. In *Virus Taxonomy*. ed by M.H.V. van Regenmortel et al. pp. 303-309. Academic Press

Xiao, H.G., Hu, J.S., Li, H.P., Gardner, D., and Fan, H.Z. 1999. Sequence analysis of a Chinese isolate of banana bunchy top virus. *Chin. J. Virol.* 15:55-63.

Xiao, H.G. and Hu, J.S. 1999. Detection of banana bunchy top virus by polymerase chain reactions assays. *J. South China Agric. Univ.* 20:5-8.

Zheng, P., Liu, Q., Liu, R.W., Xu, M.Q., Wang, T., Mai, X.Y., Gu, Y.Q., and Hu, J.S. 1999. Detection of viruses in orchids in China. *Guangdong Agric. Sci.* 6: 33-34.

Jones, V.P., Follett, P.A., Messing, R.H., Borth, W.B., Hu, J.S., and Ullman, D.E. 1998. Effects of *Sophonia rufofascia* (Homoptera:Cicadellidae) on guava production in Hawaii. *J. Econ. Entom.* 91: 693-698.

Sether, D.M., Ullman, D.E., and Hu, J.S. 1998. Transmission of pineapple mealybug wilt-associated virus by two species of mealybugs (*Dysmicoccus* spp.). *Phytopathology* 88:1224-1230.

Hu, J.S., Sether, D.M., Liu, X.P., Wang, M., Zee, F., and Ullman, D.E. 1997. Use of a tissue blotting immunoassay to examine the distribution of pineapple closterovirus in Hawaii. *Plant Dis.* 81:1150-1154.

Li, H.P., Hu, J.S., and Faan, H.C. 1997. Peptide mapping of coat proteins of cucumber mosaic virus isolates infecting banana. *Virologia Sinica* 12: 87-90.

Li, H.P., Hu, J.S., and Faan, H.C. 1997. Serological characterization of cucumber mosaic virus strains infecting banana. *Virologia Sinica* 12: 91-94.

Li, H.P., Hu, J.S., and Faan, H.C. 1997. Detection techniques of banana mosaic disease. *Chin. J. Virol.* 13: 273-277.

Ling, K.S., Zhu, H.Y., Alvizo, H., Hu, J.S., Drong, R.F., Slightom, J.L., and Gonsalves, D. 1997. The coat protein of grapevine leafroll associated closterovirus 3: cloning, nucleotide sequencing and expression in transgenic plants. *Arch. Virol.* 142:1101-1116.

Schenck, S., Hu, J.S., and Lockhart, B.E. 1997. Use of a tissue blot immunoassay to determine the distribution of sugarcane yellowleaf virus in Hawaii. *Sugar Cane* 4: 5-8.

- Zheng, P., Liu, R.W., Liu, P., Hu, J.S., and Xu, M.Q. 1997. Rapid detection of two orchid viruses. *Chin. J. Trop. Crops*. 18: 43-47.
- Shaarawy, M.A., Hu, J.S., Xie, W.S., and Sether, D. 1997. Reactivity of some Hawaiian banana bunchy top diseased samples using DAS-ELISA and a digoxigenin labelled DNA probe. *Egypt J. Agric. Res.* 75: 515-527.
- Hu, J.S., Wang, M., Sether, D., Xie, W., and Leonhardt, K. 1996. Use of polymerase chain reaction (PCR) to study transmission of banana bunchy top virus by the banana aphid (*Pentalonia nigronervosa*). *Ann. Appl. Biol.* 128: 55-64.
- Hu, J.S., Sether, D., and Ullman, D.E. 1996. Detection of pineapple closterovirus in pineapple plants and mealybugs using monoclonal antibodies. *Plant Pathol.* 45: 829-836.
- Barry, K., Hu, J.S., Kuehnle, A., and Suggi, N. 1996. Sequence analysis of cymbidium mosaic and odontoglossum ringspot viruses and comparison of RT-PCR and ELISA for detection of the two orchid viruses in Hawaii. *J. Phytopathol.* 144: 179-186.
- Forsline, P.L., Hoch, J., Lamboy, W.F., Hu, J.S., Golino, D.A., and Gonsalves, D. 1996. Comparative effectiveness of symptomatology and ELISA for detecting two isolates of grapevine leafroll on graft-inoculated Cabernet franc. *Amer. J. Enol. Viticult.* 47: 239-246.
- Li, H.P., Hu, J.S., Barry, K. and Faan, H.C. 1996. Coat protein sequence analysis of three cucumber mosaic virus strains infecting banana. *Chin. J. Virol.* 12: 236-242.
- Li, H.P., Hu, J.S., Barry, K., and Faan, H.C. 1996. Studies of transgenic tobacco plants with the coat protein genes of cucumber mosaic virus strains infecting banana. *Chin. J. Virol.* 12: 162-169.
- Porter, K.G., Kuehnle, A.R., and Hu, J.S. 1996. Lack of seed transmission of cymbidium mosaic virus in *Dendrobium*. *Lindleyana* 11: 211-213.
- Wu, Z.C., Hu, J.S., Polston, J.E., Ullman, D.E., and Hiebert, E. 1996. Complete nucleotide sequence of a Hawaiian strain of Abutilon mosaic geminivirus. *Phytopathology* 86: 608-613.
- Borth, W.B., Hu, J.S., Gardner, D.E., Kirkpatrick, B.C., and German, T.L. 1995. Occurrence of phytoplasmas in Hawaii. *Plant Dis.* 79:1094-1097.
- Hu, J.S., Ferreria, S., Wang, M., Borth, W.B., Mink, G., and Jordan, R. 1995. Purification, host range, serology, and partial sequencing of dendrobium mosaic potyvirus, a new member of bean common mosaic virus subgroup. *Phytopathology* 85: 542-546.
- Hu, J.S., Li, H.P., Barry, K., Wang, M., and Jordan, R. 1995. Comparison of dot-blot, ELISA, and RT-PCR assays for detection of two cucumber mosaic virus isolates infecting banana in Hawaii. *Plant Dis.* 79:902-906.
- Hu, J.S., Meleisea, S., Wang, M., Shaarawy, M.A., and Zettler, F.W. 1995. Dasheen mosaic potyvirus

in Hawaiian Taro. *Austral. Plant Pathol.* 24:112-117.

Hu, J.S., Sether, D.M., Harrington, H., and Ullman, D.E. 1995. Two-step heat treatment of pineapple crowns increases thermotolerance. *Hort Technology* 5:63-66.

Li, H.P., Hu, J.S., and Faan, H.C. 1995. Traditional cross-protection and genetically engineered cross-protection among strains of plant viruses. *Biol. Engin. Adv.* 15:28-32.

Wu, Z.C. and Hu, J.S. 1995. Comparison of ELISA, Dot-blot, and PCR assays for detection of whitefly-transmitted geminivirus. *Int. J. Trop. Plant Dis.* 13:205-211.

Xie, W.S. and Hu, J.S. 1995. Molecular cloning, sequence analysis, and detection of banana bunchy top virus in Hawaii. *Phytopathology* 85:339-347.

Hu, J.S., Ferreira, S., Xu, M.Q., Lu, M., and Wang, M. 1994. Transmission, movement, and inactivation of cymbidium mosaic virus and odontoglossum ringspot virus. *Plant Dis.* 78:633-636.

Hu, J.S., Lius, S., Barry, K., Wang, M., and Hamasaki, R.T. 1994. First report of a geminivirus in Hawaii. *Plant Dis.* 78:641.

Hu, J.S., Wang, M., Reolanei, R., and Meleisea, S. 1994. Detection of dasheen mosaic virus from taro plants in the field and in tissue culture. *Plant Dis.* 78:754.

Borth, W.B., Hu, J.S., and Schenck, S. 1994. Double-stranded RNA associated with yellow leaf syndrome of sugarcanes. *Sugar Cane* 4:5-8.

Hu, J.S., Pang, S.Z., Nagpala, P.G., Siemieniak, D.R., Slightom, J.L. and Gonsalves, D. 1993. The coat protein genes of squash mosaic virus: cloning, sequence analysis, and expression in tobacco protoplasts. *Arch. Virol.* 130:17-31.

Li, H.P., Hu, J.S., and Faan, H.Z. 1994. Advances in identification of cucumber mosaic virus. *Virol. Sin.* 9:187-194.

Hu, J.S., Ferreira, S., and Wang, M. 1993. Detection of cymbidium mosaic virus, odontoglossum ringspot virus, tomato spotted wilt virus, and potyviruses infecting orchids in Hawaii. *Plant Dis.* 77:464-468.

Hu, J.S., Xu, M.Q., Wu, Z.C., and Wang, M. 1993. Detection of banana bunchy top virus in Hawaii. *Plant Dis.* 77:952.

Hu, J.S., Ferreira, S., and Wang, M. 1992. Tomato spotted wilt virus on *Oncidium* orchids in Hawaii. *Plant Dis.* 76:426.

Wang, M., Cho, J.J., Provvidenti, R., and Hu, J.S. 1992. Identification of resistance to tomato spotted wilt virus in lettuce. *Plant Dis.* 76:642.

Hu, J.S., Gonsalves, D., Boscia, D., Maixner M., and Golino, D. 1991. Comparison of rapid detection assays for grape leafroll associated closteroviruses. *Vitis* 30:87-95.

Namba, S., Boscia, D., Azzam, O., Maixner, M., Hu, J. S., and Gonsalves, D. 1991. Purification and properties of closterovirus-like particles isolated from a corky bark diseased grapevine. *Phytopathology* 81:964-970.

Wang, M., Mitchell, C.J., Hu, J.S., Gonsalves, D., and Calisher, C.H. 1991. Studies to determine whether tomato spotted wilt virus replicates in *Toxorhynchites amboinensis* mosquitoes and relatedness of this virus to phleboviruses (family Bunyaviridae). *Intervirology* 33:32-40.

Hu, J.S., Gonsalves, D., and Teliz, D. 1990. Characterization of closterovirus-like particles associated with grapevine leafroll disease. *J. Phytopathol.* 128:1-14.

Hu, J.S., Gonsalves, D. and Boscia, D. 1990. Use of monoclonal antibodies to characterize grape leafroll associated closteroviruses. *Phytopathology* 80:920-925.

Boscia, D., Hu, J.S., and Gonsalves, D. 1990. Use of Western blot and monoclonal antibodies to characterize grapevine leafroll associated closteroviruses. *ATTI Giornate Fitopatol.* 3:157-162.

Hu, J.S., and Rochow, W.F. 1988. Anti-idiotypic antibodies against an anti-barley yellow dwarf luteovirus monoclonal antibody. *Phytopathology* 78:1302-1307.

Hu, J.S., Rochow, W.F., Palukaitis, P., and Dietert, R. 1988. Phenotypic mixing: mechanism of dependent transmission for two related isolates of barley yellow dwarf virus. *Phytopathology* 78:1326-1330.

Rochow, W.F., Hu, J.S., Forster, R.C., and Hsu, H.T. 1987. Parallel identification of five luteoviruses that cause barley yellow dwarf. *Plant Dis.* 71:272-275.

Francki, R.I.B., Hu, J.S., and Palukaitis, P. 1986. Taxonomy of cucurbit-infecting tobamoviruses as determined by serological and molecular hybridization analyses. *Intervirology* 26:156-163.

Hu, J.S., Rochow, W.F., and Dietert, R.R. 1985. Production and use of antibodies from hen eggs for the SGV isolate of barley yellow dwarf virus. *Phytopathology* 75:914-919.

Leadership Roles (Committees, Boards, Advisory, etc.)

Member of the Graduate Council, University of Hawaii (1998–2004)

Member of the Research Council, University of Hawaii (2007–2012)

Graduate Chair, Tropical Plant Pathology, University of Hawaii (1998–2004)

Chairman, Virology Committee of the American Phytopathological Society (1994–1995)

Chairman, Western Regional Coordinating Committee (WCC-20)

"Viruses and virus-like diseases of fruit crops". (1994–1995; 2001–2003; 2014–2015)

Member of the NSF-China Grant Review panel (2013 and 2014)

Graduate Students

<u>Category</u>	<u>Current Number of Students</u>	<u>Number Graduated (Career)</u>
<i>Chair</i> of Master's Committees		8
<i>Chair</i> of Ph.D. Committees		8
Member of Master's Committees		24
Member of Ph.D. Committees	5	29

Grant Support

Title of Grant: Genetic Technologies for Detection, Characterization, and Control of Plant Viruses in Hawaii

Source of Grant: USDA ARS

Total Dollar Value (Your share of the grant value): \$244,676

Dates of Grant: 2019–2024

Role: PI

Title of Grant: Ornamental ginger: statewide quarantine virus survey and causal agent identification for crop decline

Source of Grant: Hawaii DOA

Total Dollar Value (Your share of the grant value): \$80,000

Dates of Grant: 2019–2021

Role: CoPI

Title of Grant: Detection, characterization, and management of plant viruses

Source of Grant: USDA USID

Total Dollar Value (Your share of the grant value): \$183,400

Dates of Grant: 2015–2020

Role: PI

Title of Grant: Editing plants genomes with CRISPR-Cas for resistance to viruses

Source of Grant: USDA NIFA (Hatch)

Total Dollar Value (Your share of the grant value): \$80, 000

Dates of Grant: 2017–2019

Role: PI

Title of Grant: Characterization and management of invasive plant viruses in Hawaii

Source of Grant: USDA ARS

Total Dollar Value (Your share of the grant value): \$210, 000
Dates of Grant: 2014–2019
Role: PI

Title of Grant: Emerging plant virus diseases which threaten Hawaii’s food security and economy
Source of Grant: USDA NIFA (Hatch)
Total Dollar Value (Your share of the grant value): \$90,000.
Dates of Grant:2013–2015
Role: PI

Title of Grant: Detection and management of invasive plant viruses in Hawaii
Source of Grant: USDA-ARS
Total Dollar Value (Your share of the grant value): \$47,000
Dates of Grant:2014–2016
Role: PI

Title of Grant: The Citrus Clean Plant Network in Hawaii
Source of Grant: USDA-APHIS-PPQ National Clean Plant Network
Total Dollar Value (Your share of the grant value): \$96,000.
Dates of Grant: 2011–2014
Role: CoPI

Title of Grant: Survey of Taro (*Colocasia esculenta*) Viruses in Hawaii
Source of Grant: USDA-APHIS-PPQ Cooperative Agricultural Pest Survey
Total Dollar Value (Your share of the grant value): \$23,453
Dates of Grant: 2012–2014
Role: CoPI

Title of Grant: Survey of *Watermelon mosaic virus* and other Potyviruses in Hawaii’s Orchid Industry
Source of Grant: USDA-APHIS-PPQ Cooperative Agricultural Pest Survey
Total Dollar Value (Your share of the grant value): \$17,069
Dates of Grant: 2012–2014
Role: CoPI

Title of Grant: Development and screening of transgenic banana plants resistant to Banana bunchy top virus
Source of Grant: USDA-ARS
Total Dollar Value (Your share of the grant value): \$100,000
Dates of Grant: 2008–2014
Role: PI

Title of Grant: Management of Citrus Blight in Hawaii
Source of Grant: USDA-ARS
Total Dollar Value (Your share of the grant value): \$80,000

Dates of Grant: 2008–2014

Role: PI

Title of Grant: Development of Mexican lime plants for resistance to Citrus tristeza virus

Source of Grant: USDA-ARS

Total Dollar Value (Your share of the grant value): \$60,000

Dates of Grant: 2008–2014

Role: PI

Title of Grant: Development of disease-resistant transgenic plants

Source of Grant: USDA-ARS

Total Dollar Value (Your share of the grant value): \$100,000

Dates of Grant: 2010–2013

Role: PI

Title of Grant: Multiple resistance to viral and fungal diseases of banana using gene silencing

Source of Grant: USDA-CSREES T-STAR

Total Dollar Value (Your share of the grant value): \$175,728

Dates of Grant: 2009–2012

Role: PI

Title of Grant: Identification and characterization of a new viral disease in Hawaii's anthurium and production of virus-free plants

Source of Grant: USDA-ARS

Total Dollar Value (Your share of the grant value): \$20,000

Dates of Grant: 2009–2010.

Role: PI

Title of Grant: High through-put PCR for virus detection

Source of Grant: USDA-ARS

Total Dollar Value (Your share of the grant value): \$145,000

Dates of Grant: 2004–2009

Role: PI

Title of Grant: Environmentally-friendly strategies for management of mealybugs, ants, ampeloviruses, and mealybug wilt of pineapple

Source of Grant: USDA-CSREES (RIPMCGP)

Total Dollar Value (Your share of the grant value): \$40,000

Dates of Grant: 2006–2008.

Role: PI

Title of Grant: Pineapple virus control

Source of Grant: USDA-ARS Special Grant on Pineapple

Total Dollar Value (Your share of the grant value): \$121,000

Dates of Grant: 2005–2010

Role: PI

Title of Grant: Detection, distribution, and etiological role of invasive badnaviruses in pineapple
Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$210,000
Dates of Grant: 2005–2010
Role: PI

Title of Grant: Effects of Viral Suppressors of RNA Silencing in Sugarcane
Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$240,000
Dates of Grant: 2005–2010
Role: PI

Title of Grant: Transgenic citrus plants with broad and durable resistance to CTV
Source of Grant: USDA-CSREES, Special Competitive Grant Program
Total Dollar Value (Your share of the grant value): \$165,000
Dates of Grant: 2004–2007
Role: PI

Title of Grant: Field evaluation of genetically engineered banana plants for BBTV-resistance in Hawaii
Source of Grant: J. USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$210,000
Dates of Grant: 2004–2007
Role: PI

Title of Grant: Development of transgenic pineapple plants with virus-resistance, nematode-resistance, and flowering-control
Source of Grant: USDA-ARS Special Grant on Minor Crop
Total Dollar Value (Your share of the grant value): \$53,000
Dates of Grant: 2004–2009
Role: PI

Title of Grant: Development of transgenic pineapple plants to control mealybug wilt of pineapple
Source of Grant: USDA-ARS Special Grant on Pineapple Genetic Engineering
Total Dollar Value (Your share of the grant value): \$98,000
Dates of Grant: 2004–2009
Role: PI

Title of Grant: Transgenic plants with broad-spectrum resistance to viruses
Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$218,000
Dates of Grant: 2002–2007
Role: PI

Title of Grant: Detection, characterization, and management of phytoplasma diseases in Hawaii

Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$236,000
Dates of Grant: 2002–2006
Role: PI

Title of Grant: Development of transgenic pineapple plants with virus-resistance, nematode-resistance, and flowering-control
Source of Grant: USDA-ARS Special Grant on Minor Crop
Total Dollar Value (Your share of the grant value): \$170,000
Dates of Grant: 2002–2005
Role: PI

Title of Grant: Characterization of a new closterovirus associated with mealybug wilt of pineapple
Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$93,000
Dates of Grant: 2001–2006
Role: PI

Title of Grant: Development of strategies to manage citrus tristeza virus for a new citrus industry in Hawaii
Source of Grant: USDA-CSREES, T-STAR
Total Dollar Value (Your share of the grant value): \$258,000
Dates of Grant: 2000–2006
Role: PI

Title of Grant: Special Grant on Pineapple Genetic Engineering. “Development of transgenic pineapple plants to control mealybug wilt of pineapple”
Source of Grant: USDA-ARS
Total Dollar Value (Your share of the grant value): \$130,000
Dates of Grant: 2000–2005
Role: PI

Title of Grant: Development and implementation of environment-friendly strategies for management of mealybug wilt of pineapple
Source of Grant: USDA-CSREES
Total Dollar Value (Your share of the grant value): \$203,500
Dates of Grant: 2003–2005
Role: PI

Title of Grant: Transgenic citrus plants with broad and durable resistance to CTV
Source of Grant: USDA-CSREES
Total Dollar Value (Your share of the grant value): \$165,000
Dates of Grant: 2004–2006
Role: PI

Title of Grant: Development and evaluation of strategies to manage closteroviruses, mealybugs, and mealybug wilt of pineapple

Source of Grant: Hawaii DOA

Total Dollar Value (Your share of the grant value): \$140,000

Dates of Grant: 2002–2005

Role: PI

Title of Grant: Use of biotechnology to produce transgenic bananas resistance to banana bunchy top virus infection

Source of Grant: Hawaii DOA.

Total Dollar Value (Your share of the grant value): \$30,000

Dates of Grant: 2004–2005

Role: PI

Title of Grant: Transgenic citrus plants with broad and durable resistance to CTV

Source of Grant: USDA-CSREES

Total Dollar Value (Your share of the grant value): \$142,000

Dates of Grant: 2002–2004

Role: PI

Title of Grant: Detection, characterization, and management of a new closterovirus associated with mealybug wilt of pineapple

Source of Grant: Hawaii DOA

Total Dollar Value (Your share of the grant value): \$134,000

Dates of Grant: 2000–2002

Role: PI

Title of Grant: Development and evaluation of BBTV-resistant transgenic banana plants with banana bunchy top virus genes using Hawaiian varieties

Source of Grant: USDA-ARS

Total Dollar Value (Your share of the grant value): \$210,000

Dates of Grant: 1999–2002

Role: PI

Title of Grant: Use of biotechnology to produce transgenic bananas resistance to banana bunchy top virus infection

Source of Grant: Hawaii DOA

Total Dollar Value (Your share of the grant value): \$60,000

Dates of Grant: 1999–2000

Role: PI

Title of Grant: Engineering plants constitutively expressing broad-spectrum resistance

Source of Grant: USDA-CSREES

Total Dollar Value (Your share of the grant value): \$173,000

Dates of Grant: 1998–2002

Role: PI

Title of Grant: Transmission, epidemiology, and management of viruses in mealybug wilt of pineapple

Source of Grant: Hawaii DOA

Total Dollar Value (Your share of the grant value): \$149,000

Dates of Grant: 1997–1999

Role: PI

Title of Grant: Development of rapid, sensitive, and reliable assays for detection of viruses infecting papaya, citrus, and banana

Source of Grant: USDA-ARS Special Grant for Minor Crops Program

Total Dollar Value (Your share of the grant value): \$75,000

Dates of Grant: 1997–2001

Role: PI

Title of Grant: Use of biotechnology to produce transgenic bananas resistance to banana bunchy top virus infection,

Source of Grant: World Bank Banana Improvement Program

Total Dollar Value (Your share of the grant value): \$114,125

Dates of Grant: 1995–1998

Role: PI

Title of Grant: Development of rapid detection assays for virus and virus-like diseases of tropical fruit crops

Source of Grant: USDA-ARS Special Agreement Grant

Total Dollar Value (Your share of the grant value): \$74,000

Dates of Grant: 1995–2000

Role: PI

Title of Grant: Role of mealybug stress in pineapple mealybug wilt and pineapple productivity

Source of Grant: USDA-Western Regional IPM

Total Dollar Value (Your share of the grant value): \$150,000

Dates of Grant: 1997–2000

Role: PI

Title of Grant: Use of biotechnology to produce transgenic bananas resistance to banana bunchy top virus infection

Source of Grant: World Bank Banana Improvement Program

Total Dollar Value (Your share of the grant value): \$114,125

Dates of Grant: 1995–1997

Role: PI

Title of Grant: Development of rapid detection assays for virus and virus-like diseases of tropical fruit crops

Source of Grant: USDA-ARS Special Agreement Grant

Total Dollar Value (Your share of the grant value): \$25,000

Dates of Grant: 1995–2000

Role: PI

Title of Grant: Investigation into the biology and ecology of *Sophonia rufofascia* in forest and watershed areas

Source of Grant: Land & Natural Resources/USDA

Total Dollar Value (Your share of the grant value): \$43,000

Dates of Grant: 1995

Role: PI

Title of Grant: Replication of banana bunchy top virus in alternative plants and in aphid vectors

Source of Grant: USDA-National Research Initiative Competitive Grants Program

Total Dollar Value (Your share of the grant value): \$49,807

Dates of Grant: 1994–1996

Role: PI

Title of Grant: Papaya fruit ripening disorder-evaluation of impact and etiology

Source of Grant: USDA-ARS Special Grant for Minor Crops Program

Total Dollar Value (Your share of the grant value): \$25,600

Dates of Grant: 1994

Role: PI

Title of Grant: Management of sweetpotato whitefly

Source of Grant: USDA-ARS Special Grant for Minor Crops Program

Total Dollar Value (Your share of the grant value): \$30,000

Dates of Grant: 1994

Role: PI

Title of Grant: Effect of leafhoppers on guava production

Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee

Total Dollar Value (Your share of the grant value): \$20,000

Dates of Grant: 1994

Role: PI

Title of Grant: Etiology of macadamia quick decline (MQD)

Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee

Total Dollar Value (Your share of the grant value): \$50,000

Dates of Grant: 1994

Role: PI

Title of Grant: Use of biotechnology for detection and control of MLO diseases of fruit trees in Hawaii

Source of Grant: USDA-CSRS Section 406 program

Total Dollar Value (Your share of the grant value): \$174,400

Dates of Grant: 1993–1996

Role: PI

Title of Grant: Detection and control of MLOs in guava and macadamia trees in Hawaii
Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee
Total Dollar Value (Your share of the grant value): \$30,000
Dates of Grant: 1993–1994
Role: PI

Title of Grant: Control of tomato spotted wilt virus using transgenic plants that produce virus-specific monoclonal antibodies
Source of Grant: Ohio Floral Foundation
Total Dollar Value (Your share of the grant value): \$10,000
Dates of Grant: 1993–1994
Role: PI

Title of Grant: The role of two spotted leafhopper in disorders of uluhe and ohia in Hawaiian forests
Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee.
Total Dollar Value (Your share of the grant value): \$54,121
Dates of Grant: 1993
Role: PI

Title of Grant: Molecular approaches to *Dendrobium* orchid virus control
Source of Grant: USDA-CSRS Section 406 Program
Total Dollar Value (Your share of the grant value): \$162,200
Dates of Grant: 1992–1996
Role: PI

Title of Grant: Control of tomato spotted wilt virus using transgenic plants that produce virus-specific monoclonal antibodies
Source of Grant: American Floral Endowment
Total Dollar Value (Your share of the grant value): \$76,500
Dates of Grant: 1992–1996
Role: PI

Title of Grant: Development of diagnostic assays for detection of the yellow leaf syndrome causal agent in sugarcane
Source of Grant: Hawaiian Sugar Planter's Association
Total Dollar Value (Your share of the grant value): \$50,750
Dates of Grant: 1992
Role: PI

Title of Grant: Control of banana bunchy top virus with genetic engineered transgenic banana plants
Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee
Total Dollar Value (Your share of the grant value): \$150,000
Dates of Grant: 1992–1994

Role: PI

Title of Grant: Mealybug wilt of pineapple: etiology, epidemiology, and control

Source of Grant: State of Hawaii Governor's Agricultural Coordinating Committee

Total Dollar Value (Your share of the grant value): \$200,000

Dates of Grant: 1991–1995

Role: PI

Title of Grant: Control of tomato spotted wilt virus using transgenic plants that produce virus-specific antibodies

Source of Grant: Gloeckner Foundation, Inc

Total Dollar Value (Your share of the grant value): \$5,000

Dates of Grant: 1991

Role: PI

Title of Grant: Etiology and rapid detection of yellow leaf syndrome of sugarcanes

Source of Grant: Hawaiian Sugar Planter's Association

Total Dollar Value (Your share of the grant value): \$5,000

Dates of Grant: 1991

Role: PI