

CURRICULUM VITAE

David A. Christopher

Professor

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Molecular Biosciences & Bioengineering

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Education

B.S.	Plant Science	University of New Hampshire	1980
M.S.	Plant Genetics	Weizmann Institute of Science	1983
Ph.D.	Molecular & Cellular Biology	University of Arizona	1989

Research Experience

Professor, Molecular Biosciences & Bioengineering, University of Hawaii	2019-current
Chair and Professor, Molecular Biosciences & Bioengineering, University of Hawaii	2011-2019
Professor, Molecular Biosciences & Bioengineering, University of Hawaii	2006-2011
Visiting Professor, Molecular & Cellular Biology, University of Colorado	2005-2006
Professor, Molecular Biosciences & Bioengineering, University of Hawaii	2002-2005
Associate Professor, Molecular Biosciences & Bioengineering, University of Hawaii	1998-2002
Assistant Professor, Plant Molecular Physiology, University of Hawaii	1994-1998
Postdoctoral Associate in lab of Dr. John E. Mullet, Texas A & M University	1990-1994
Predoctoral Training in lab of Dr. Richard B. Hallick, University of Arizona	1984-1989
M.S. training in lab of Dr. Moshe Feldman, Weizmann Institute of Science	1980-1983

Professional, Academic, Administrative and Scientific Activities

Department Chair: *Molecular Biosciences & Bioengineering*, Sept. 1, 2011 – Sept. 30, 2019

Vice Chair, Institutional Biosafety Committee (14 years): Evaluated all UH recombinant DNA protocols. Ensured compliance of the university with all federal and state EHS rules.

Teaching: Biotechnology: Science & Ethical Issues (2001-current); Plant Biochemistry (1994-2006); Molecular Biotechnology (1998-2008); Undergraduate and Graduate Research 499 and 699 (1994-current).

Funded Competitive Grants: \$5,447,884. since 1994: NSF, DOE, USDA, US-Israel Binational Ag Res.

Journal Reviewer: *Functional Plant Biology, Nucleic Acids Research, Plant & Cell Physiology, Plant Physiology, Physiologia Plantarum, Plant Science, The Plant Cell, The Plant Journal, Experimental Botany.*

Grant Review Panels and Grant reviewer: National Science Foundation (Molecular Cellular Biology, Genomics, Integrative Organismal Systems); U.S. Dept. of Energy Biosciences Program; USDA-Tropical & Subtropical Agricultural Research; U.S. Civilian Research & Development Foundation; Australian Research Council, Hong Kong Research Grants Council, US-Israel Binational Agricultural Research.

Conference Presentation Highlights:

Speaker, Symposium “Cell Biology” *American Society of Plant Biologists (ASPB)* 7/9-13/2016, Austin, TX

Speaker, Symposium “Crop Improvement” ASPB, Plant Biology, 8/5/2009, Honolulu, HI

Speaker, Symposium “Membrane Transport” ASPB, Plant Biology, 8/5-9/2006, Boston, MA

Chair and Session Organizer, “Advances in Structural Analysis of Plant Cell Function,” *Microscopy & Microanalysis*, Honolulu, HI, 7/31- 8/4/05.

Conference Presentation Highlights: (Continued)

Plenary Speaker, International Conference: Crassulacean Acid Metabolism, Tahoe City, CA, 7/29-8/1/04.
Program Committee Member, The Annual Conference of the ASPB in Honolulu, HI, 2003.
Participant, Keystone Symposia, Plant Responses to Abiotic Stress, Sante Fe, NM, 02/19-24, 2004;
Poster Session Chair and Mini-symposium Speaker, "Transcription Regulation & Emerging Technologies", ASPB, Plant Biology – Honolulu, HI, 07/25-30, 2003.
Speaker, "Conference on Tetrapyrrole Photoreceptors" Brown Univ., Providence, RI, 07/25-30, 2001
Speaker, Western Photosynthesis Conferences, January, 1998, 1999, 2000, 2004, Pacific Grove, CA

Awards: Excellence in Research Award 2012, Molecular Biosciences, University of Hawaii, CTAHR

Professional Organizations: American Society of Plant Biologists

Publications

64. Yuen, C.Y.L, Wang, P.-F., Kang, B.-H., Matsumoto, K., Christopher, D.A. 2017. A Non-Classical Member of the Protein Disulfide Isomerase Family, PDI7 of *Arabidopsis thaliana*, Localizes to the cis-Golgi and Endoplasmic Reticulum Membranes. *Plant & Cell Physiology*, 58: 1103–1117. **(Cover Feature)**.
63. Yuen, C.Y.L, Shek, R., Kang, B.-H., Matsumoto, K., Cho, E.-J., Christopher, D.A. 2016. Arabidopsis protein disulfide isomerase-8 is a type I endoplasmic reticulum transmembrane protein with thiol-disulfide oxidase activity. *BMC Plant Biology*, 16:181-196.
62. Shimshock, R.G. and Christopher, D.A. 2016. Genetic Manipulation of Stilbene Composition in Plants to Enhance Pathogen Resistance. (In: Stilbene Derivatives Applications and Research, S. Henderson, Ed.), Nova Science Publishers, NY. pp. 23-48.
61. Yuen, C.Y.L, Wong, K., Christopher, D.A. 2016. Phylogenetic characterization and promoter expression analysis of a novel hybrid protein disulfide isomerase/cargo receptor subfamily unique to plants and chromalveolates. *Molecular Genetics Genomics*, 291: 455–469.
60. Chinnasri, B. Sipes, B.S., Borsics T., Christopher, D.A. (2016) Induction of pathogenesis-related gene 1 (PR-1) by acibenzolar-s-methyl application in pineapple and its effect on reniform nematodes (*Rotylenchulus reniformis*). *Agricultural & Natural Resources*, 50:368–373.
59. Teixeira da Silva, J.A., Dobra´nszki, J., Zeng, S.J. , Winarto, B., Lennon, A.M., Jaufeerally-Fakim, Y., Christopher, D.A. (2015) Genetic transformation and molecular research in Anthurium: progress and prospects. *Plant Cell Tissue & Organ Culture*, 123:205–219.
58. Hilario, L.C., Shimshock, R., Ng, Cheryl, Bingham, J.-P., Christopher, D.A. 2015 Screening *Carica papaya* native promoters driving stilbene synthase expression in *Arabidopsis thaliana* for resveratrol glucoside (piceid) synthesis. *Plant Biotechnology Reports*, 9: 307-317.
57. Hilario, L.C., Christopher, D.A. 2015. Improved Agrobacterium-mediated transformation of *Carica papaya* cultivar ‘Kapoho’ from embryogenic cell suspension cultures. *In Vitro Cellular & Developmental Biology-Plant* 51: 580-587. <http://dx.doi.org/10.1007/s11627-015-9719-4>.
56. Porter, B.W., Yuen, C.Y.L, Christopher, D.A. 2015. Dual protein trafficking to secretory and non-secretory cell compartments: Clear or double vision? *Plant Science*, 234: 174-179.
55. Porter, B.P., Christopher, D.A. and Zhu, Y.J. 2014. Genomics of Papaya Disease Resistance. In: Genetics and Genomics of Papaya. Ming R and Moore PH (eds). Springer Science and Business Media, New York.
54. Hilario, L.C., Porter, B.W., Zhu, Y.J., Christopher, D.A. 2014. Identification and Characterization of Papaya (*Carica papaya*, L.) Promoters by Heterologous Expression as eGFP Fusions in *Arabidopsis thaliana*. *Tropical Plant Biology* 7:85-99.

53. Yuen, C.Y.L, Matsumoto, K.O., Christopher, D.A. 2013. Variation in the subcellular localization and protein folding activity among *Arabidopsis thaliana* homologs of PDI. *Biomolecules* 3:848-869.
52. Yuen, C.Y.L, Christopher, D.A. 2013. The group IV-A cyclic nucleotide-gated channels, CNGC19 and CNGC20, localize to the vacuole membrane in *A. thaliana*. *AoB Plants* 5: doi:10.1093/aobpla/plt012
51. Cho, E.J., Yuen, C.Y., Kang, B-H., Ondzighi, C., Staehelin, L. A., Christopher, D.A. (2011) Protein disulfide isomerase-2 of *Arabidopsis* mediates protein folding and localizes to both the secretory pathway and nucleus, where it interacts with maternal effect embryo arrest factor. *Molecules and Cells* 32:459-75.
50. Yuen, C.Y.L and Christopher, D.A. 2010. The role of cyclic nucleotide-gated channels in cation nutrition and abiotic stress. (In: "Ion Channels and Plant Stress Responses, V. Demidchik & F. Maathuis eds), Springer-Verlag, Berlin-Heidelberg, Germany, pp. 137-158.
49. Guo, K.M., Babourina, O., Christopher, D.A., Borsics, T., Rengel, Z. (2010) The cyclic nucleotide-gated channel AtCNGC10 transports Ca^{2+} and Mg^{2+} in *Arabidopsis*. *Physiologia Plantarum* 139:303-312.
48. Neuteboom L.W., Matsumoto K.O., Christopher D.A. (2009) An extended AE-rich N-terminal trunk in secreted pineapple cystatin enhances inhibition of fruit bromelain and is post-translationally removed during ripening. *Plant Physiology* 151:515-527 (**Cover Feature**).
47. Porter B.W., Y.J. Zhu, Christopher, DA (2009) *Carica papaya* genes regulated by *Phytophthora palmivora*: A new system for comparative genomics of compatible *Phytophthora*-plant interactions. *Tropical Plant Biology* 2:84-97.
46. Porter, B.W., Zhu, Y.J., Webb, D.T., Christopher, D.A. 2009. Novel thigmomorphogenetic responses in *Carica papaya*: Touch decreases anthocyanin levels and stimulates petiole cork outgrowths. *Annals of Botany* 103:847-858.
45. Ondzighi, C.A., Christopher, D.A., Cho, E.J., Chang, S.C., Staehelin, L.A. 2008. Arabidopsis Protein Disulfide Isomerase-5 Inhibits Cysteine Proteases during Trafficking to Vacuoles before Programmed Cell Death of the Endothelium in Developing Seeds. *The Plant Cell* 20:2205-2220.
44. Lu, D-P, Christopher, DA (2008) Light enhances the unfolded protein response as measured by BiP2 gene expression and the secretory GFP-2SC marker in *Arabidopsis*. *Physiologia Plantarum* 134:360-368.
43. Lu, D-P, Christopher, DA (2008) Endoplasmic reticulum stress activates the expression of a sub-group of protein disulfide isomerase genes and AtbZIP60 modulates the response in *Arabidopsis thaliana*. *Molecular Genetics & Genomics* 280:199-210.
42. Guo, K.M., Babourina, O., Christopher, D.A., Borsics, T., Rengel, Z. (2008) The cyclic nucleotide-gated channel, AtCNGC10, influences salt tolerance in *Arabidopsis*. *Physiologia Plantarum* 134: 499-507
41. Porter, BW, Aizawa, KS, Zhu, YJ, Christopher DA (2008) Differentially expressed and new non-protein-coding genes from a *Carica papaya* root transcriptome survey. *Plant Science* 174:38-50 (2008).
40. Ming, R et al. (2008) Genome of the transgenic tropical fruit tree papaya (*Carica papaya* L.) *Nature* 452:991-995
39. Lu, D.-P., Christopher, D.A. 2008. The effect of irradiance and redox-modifying reagents on the 52 kDa protein disulfide isomerase of *Arabidopsis* chloroplasts. *Biologia Plantarum* 52: 42-48.
38. D. A. Christopher, Borsics T, Yuen CYL, Ullmer W, Andème-Ondzighi C, Andres ML, Kang BH, Staehelin L.A. (2007) The cyclic nucleotide-gated cation channel AtCNGC10 traffics from the ER via Golgi vesicles to the plasma membrane of *Arabidopsis* root and leaf cells. *Biomedical Central Plant Biology* 7(48): 1471-2229. <http://www.biomedcentral.com/1471-2229/7/48>
37. T. Borsics, D. Webb, C. Ondzighi, L.A. Staehelin, D. A. Christopher, The cyclic nucleotide-gated calmodulin-binding channel AtCNGC10 localizes to the plasma membrane and influences numerous growth responses and starch accumulation in *Arabidopsis thaliana*. *Planta* 225:563-573 (2007).

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36. Lau, T.S.L., Eno, E., Goldstein, G., Smith, C. Christopher, D.A. (2006) Ambient levels of UV-B in Hawaii combined with nutrient deficiency decrease photosynthesis in near-isogenic maize lines varying in leaf flavonoids: Flavonoids decrease photoinhibition in plants exposed to UV-B. *Photosynthetica*, 44: 394-403.
35. Lu D-P, Christopher, DA (2006) Immunolocalization of a protein disulfide isomerase to *Arabidopsis thaliana* chloroplasts and its association with starch biogenesis. *Intl. J. Plant Sciences* 167(1):1-9.
34. D.-P. Lu and D.A. Christopher, Analysis of isoforms of protein disulfide isomerase in plants by immuno-microscopy." *Microscopy & Microanalysis*, 11(S2):1160-1161, (2005).
33. X.L. Li, T. Borsics, H.M. Harrington, D.A. Christopher, *Arabidopsis* AtCNGC10 rescues potassium channel mutants of *E. coli*, yeast and *Arabidopsis* and is regulated by calcium/calmodulin and cyclic GMP in *E. coli*. *Functional Plant Biology*, 32:643-653 (2005).
32. D.M. Hayden and D.A. Christopher, Characterization of senescence-associated gene expression and senescence-dependent and -independent cysteine proteases differing in microsomal processing in Anthurium, *Plant Science*, 166:779-790, (2004).
31. D.A. Christopher, Photosensory Pathways Regulating Chloroplast Gene Expression, (In: Handbook of Photochemistry & Photobiology, M.S.A. Abdel-Mottaleb & H.S. Nalwa, eds), American Scientific Publishers, 4:249-268, (2003).
30. L. Zhou, C.-C. Chen, R. Ming, D.A. Christopher, R.P. Paull, Apoplastic invertase and its enhanced expression and post-translational control during papaya fruit maturation and ripening, *J. Amer. Soc. Hort. Sci.* 128:628-635, (2003).
29. L. W. Neuteboom, W. Y. Kunimitsu, D. Webb, D. A. Christopher, Characterization and tissue-regulated expression of genes involved in pineapple (*Ananas comosus* L.) root development. *Plant Science*, 165:1021-1035, (2002)
28. E. Meiri, A. Levitan, F. Guo, D.A. Christopher, D.G. Schaefer, J.P. Zryd, A. Danon. Characterization and knock-out mutations of three PDI-like genes in *Physicomitrella patens*. *Molecular Genetics & Genomics* 267: 231-240 (2002).
27. K.E. Thum, M. Kim, D.A. Christopher, J.E. Mullet, Cryptochrome 1 and 2 and phytochrome A co-activate the chloroplast *psbD* blue light responsive promoter, *The Plant Cell* 13: 2747-2760 (2001)
26. Y. Shen, A. Danon, and D.A. Christopher, RNA binding-proteins interact specifically with the *Arabidopsis* chloroplast *psbA* mRNA 5' untranslated region in a redox-dependent manner, *Plant & Cell Physiology* 42: 1071-1078 (2001)
25. L. Chun, A. Kawakami, and D.A. Christopher, Phytochrome A mediates blue light and UV-A-dependent chloroplast gene transcription in green leaves, *Plant Physiology* 125:1957-1966 (2001).
24. D. A. Christopher, *Engineering Genes: The Gene Genie's Progeny* THE WORLD & I, Washington Times Press, pp. 172-179, January, 2000.
23. L. Zhou, D.A. Christopher, and R. Paull, Defoliation and fruit removal of papaya (*Carica papaya* C.): Fruit production, sugar accumulation and sucrose metabolism. *J. American Society Horticultural Science*, 125: 644-652 (2000).
22. D.A. Christopher, Y. Shen, P. Dudley, and N.F. Tsinoremas, Expression of a higher plant chloroplast *psbD* promoter in a cyanobacterium (*Synechococcus* sp. strain PCC7942) reveals a conserved cis-element, designated PGT, that differentially interacts with sequence-specific binding factors during leaf development. *Current Genetics* , 35:657-666 (1999).
21. M. Kim, D.A. Christopher, J.E. Mullet ADP-dependent phosphorylation regulates association of a DNA-binding complex with the barley chloroplast *psbD* blue-light-responsive promoter. *Plant Physiology* 119:663-670, (1999).

20. N.F. Tsinoremas, A. Kawakami and D.A. Christopher, High-Fluence Blue Light Stimulates Transcription from a Higher Plant Chloroplast *psbA* Promoter Expressed in a Cyanobacterium, *Synechococcus* (sp. Strain PCC7942) *Plant and Cell Physiology*, 40:448-452 (1999).
19. D.A. Christopher and P. H. Hoffer, DET1 represses a chloroplast blue light-responsive promoter in a developmental and tissue-specific manner *The Plant Journal* , 14:1-11 (1998).
18. P.H. Hoffer and D. A. Christopher, Structure and blue light-responsive transcription of a chloroplast *psbD* promoter from *Arabidopsis thaliana*, *Plant Physiology*, 115: 213 - 222 (1997).
17. D.A. Christopher, L. Xinli, M. Kim and J.E. Mullet, Involvement of protein kinase and extra-plastidic serine/threonine protein phosphatases in signaling pathways regulating plastid transcription and the *psbD* blue light-responsive promoter in barley (*Hordeum vulgare* L.) *Plant Physiology*, 113: 1273-1282 (1997).
16. D.A. Christopher, Leaf development and phytochrome modulate the activation of *psbD-psbC* transcription by high-fluence blue light in barley chloroplasts *Photosynthesis Research*, 47: 239-251 (1996).
15. D.A. Christopher, Regulation of *psbD-psbC* transcription by blue light and UV-A radiation in higher plant chloroplasts In: *Photosynthesis: From Light to Biosphere*. (P. Mathis, Ed), Vol. III: 563-566, Kluwar Academic Publishers (1995).
14. D.A. Christopher and J.E. Mullet, 1994. Separate photosensory pathways co-regulate blue light-ultraviolet-A-activated *psbD-psbC* transcription and light-induced D2 and CP43 degradation in barley (*Hordeum vulgare*) chloroplasts, *Plant Physiology*, 104:1119-1129. (**Cover Feature**).
13. M.K. Kim, D.A. Christopher and J.E. Mullet, Direct evidence for selective modulation of *psbA*, *rpoA*, *rbcL* and 16S RNA stability during barley chloroplast development, *Plant Molecular Biology*, 22: 447-463 (1993).
12. D.A. Christopher, MK Kim, and J.E. Mullet, A novel light-regulated promoter is conserved in cereal and dicot chloroplasts, *The Plant Cell*, 4:785-798 (1992).
11. J.E. Mullet, J.C. Rapp, B.J. Baumgartner, T. Berends-Sexton, and D.A. Christopher, Regulation of chloroplast biogenesis in barley In: *Plant Molecular Biology 2*, R.G. Hermann and B. Larkins, Eds. Plenum Press. NY pp. 439-447 (1991).
10. D. W. Copertino, D.A. Christopher and R.B. Hallick A mixed group II/group III twintron in the *Euglena gracilis* chloroplast ribosomal protein S3 gene: evidence for intron insertion during gene evolution. *Nucleic Acids Research*, 19: 6491-6497, (1991)
9. J.K. Stevenson, R.G. Drager, D.W. Copertino, D.A. Christopher, K.P. Jenkins, G. Yepiz-Plascencia, R. B. Hallick, Intercistronic group III introns in polycistronic ribosomal protein operons of chloroplasts *Molecular & General Genetics*, 228:183-192 (1991).
8. D.A. Christopher and R.B. Hallick, Complex RNA maturation pathway for a chloroplast ribosomal protein operon with an internal tRNA cistron *The Plant Cell*, 2: 659-671 (1990).
7. T.B. Sexton, D.A. Christopher, J.E. Mullet, Light-induced switch in barley *psbD-psbC* promoter utilization: A novel mechanism regulating chloroplast gene expression *J. European Molecular Biology Organization (EMBO J.)* 9:4485-4494 (1990).
6. D.A. Christopher and R.B. Hallick, *Euglena gracilis* chloroplast ribosomal protein operon: A new chloroplast gene for ribosomal protein L5 and description of a novel organelle intron category designated group III *Nucleic Acids Research*, 17:7591-7608 (1989).

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5. J.A. Nickoloff, D.A. Christopher, R.G. Drager and R.B. Hallick, Nucleotide sequence of the *Euglena gracilis* chloroplast genes for isoleucine, phenylalanine and cysteine transfer RNAs and ribosomal protein S14 *Nucleic Acids Research*, 17:4882 (1989).
4. D.A. Christopher, J.C. Cushman, C.A. Price, and R.B. Hallick, Organization of ribosomal protein genes *rpl23*, *rpl2*, *rps19*, *rpl22* and *rps3* on the *Euglena gracilis* chloroplast genome *Current Genetics*, 14: 275-286 (1988).
3. J.C. Cushman, D.A. Christopher, M.C. Little, R.B. Hallick and C.A. Price, Organization and expression of the *psbE*, *psbF*, *orf38* and *orf42* gene loci on the *Euglena gracilis* chloroplast genome *Current Genetics* 13:173-180 (1988).
2. D.A. Christopher, D. Atsmon and M. Feldman, Mode of inheritance and chromosomal allocation of stunting genes in common wheat *Crop Science*, 25:147-151 (1985).
1. D.A. Christopher and J.B. Loy, Influence of foliarly applied growth regulators on sex expression in watermelon *J. American Society Horticultural Science*, 107: 401-404 (1982).

Recent Symposium Abstracts, Papers and Conference Presentations

55. Yuen, CYL, Matsumoto, KO, Shek, R. Carrillo, R, Christopher, DA (2019) Variations in the structure, subcellular localization and protein folding activity of evolutionary diverse protein disulfide isomerases in *Arabidopsis thaliana*. American Society of Plant Biologists, Aug. 3-7, 2019, San Jose, CA
54. Yuen, C.Y.L, Wang, P.-F., Kang, B.-H, Matsumoto, K., Christopher, D.A. 2017. A Non-classical Member of the Protein Disulfide Isomerase Family, PDI7 of *Arabidopsis thaliana*, Cycles Between the cis-Golgi and Endoplasmic Reticulum Membranes. Cell Biology, *American Society of Plant Biologists*, June 24-27, 2017, Honolulu, HI.
53. Christopher, D.A. , Yuen, C.Y.L, Kang, B.-H., Matsumoto, K., Shek, R., 2016. The *Arabidopsis* Protein Disulfide Isomerases-7 and -8 are Transmembrane Proteins of the cis-Golgi and Endoplasmic Reticulum: Oxidase and Secretory Functions. **Concurrent Symposium 20: Cell Biology**, *American Society of Plant Biologists*, July 9-13, 2016, Austin, TX
52. Yuen, CYL, Matsumoto, KO, Kang, B-H, Christopher, DA (2015) PDI7, a Novel Membrane-bound Member of the Protein Disulfide Isomerase Family, Localizes to the Cis-Golgi Cisternae and Endoplasmic Reticulum in *Arabidopsis Thaliana*. (700-023-Z) Annual Meeting of the American Society of Plant Biologists, July 25-30, 2015, Minneapolis, MN
51. Hilario, LC, Christopher, DA (2015) Comparative functional identification and analysis of *Carica papaya* promoters in the model system *Arabidopsis thaliana* revealed post-transcriptional regulation of gene expression. 20th Plant Biology Symposium (Plant Stress-Omics in a Changing Climate), Penn State University. May 13-16, 2015.
50. Shimshock, R, Hilario, LC, Bingham, JP, Christopher, DA (2015) Biochemical analysis of the antimicrobial resveratrol glucoside in transgenic papaya calli differentially expressing the stilbene synthase gene controlled by three native papaya promoters. Annual Meeting of the American Society of Plant Biologists, July 25-30, 2015 Minneapolis, MN
49. Hilario, LC, Christopher, DA (2015) P06028-C Comparative functional identification and analysis of *Carica papaya* promoters in the model system *Arabidopsis thaliana* revealed post-transcriptional regulation of gene expression. Annual Meeting of the American Society of Plant Biologists, July 12-16, 2014 Portland, OR
48. Yuen, CYL, Matsumoto, KO, Shek, R, Christopher, DA (2013) Variation in the subcellular localization and protein folding activity among *Arabidopsis thaliana* homologs of protein disulfide isomerase. Annual Meeting of the American Society of Plant Biologists, July 20-24, 2013 Providence, RI
47. Christopher DA, Cho EJ, Yuen CY, Ondzighi-Assoume CA, Staehelin LA (2011) Protein disulfide isomerase-2 mediates protein folding in the endoplasmic reticulum and also localizes to the nucleus, where it interacts with maternal effect embryo arrest factor, P02050, Annual Meeting of the American Society of Plant Biologists, Aug. 6-10, 2011, Minneapolis, MN
46. Christopher DA, Cho EJ, Ondzighi-Assoume CA, Staehelin LA (2009) Protein disulfide isomerase-2 (PDI2) interacts with, and localizes to, diverse components of the nucleus and secretory pathway, including the embryo arrest transcription factor (MEE8) involved in seed biogenesis. Annual Meetings of the American Society of Plant Biologists and the Phycological Society of America, July 18-22, Honolulu, HI, USA.

45. Neupane, KR, Lum, JM, Messa-Oh, C, Perez, PA, Christopher, David A (2009) Advances in Biosciences Education for Community Colleges: The journey from summer workshop to year-round independent research project. Annual Meetings of the American Society of Plant Biologists and the Phycological Society of America, July 18-22, Honolulu, HI, USA.

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44. Porter BW, Zhu J, Christopher DA (2009) Root-expressed *Carica papaya* genes regulated by *Phytophthora palmivora*: A promising new system for comparative genomics of *Phytophthora*-plant interaction American Phytopathological Society Annual Meeting, August 1-5 in Portland, OR, USA

43. Porter B.W., Zhu Y.J., Webb DT, Christopher DA (2009) Novel thigmomorphogenetic responses in *Carica papaya*: touch decreases anthocyanin levels and stimulates petiole cork outgrowths. Annual Meetings of the American Society of Plant Biologists and the Phycological Society of America. Honolulu, Hawai'i, July 18-22.

42. Zhu, YJ, Porter, BW and Christopher, DA (2009) Characterization and Cloning of Pathogen-inducible genes and promoters of *Carica papaya* to Improve resistance to *Phytophthora palmivora*. The Workshop on Induced Resistance in Plants Against Insects and Diseases, p. 22, May, Granada, Spain.

41. Ondzighi-Assoume C., Christopher D.A., Cho, EJ, Shu S.C., Staehelin L.A. (2008) Protein Disulfide Isomerase-5 Regulates The Proteases Involved in Programmed Cell Death in Arabidopsis, P30002. American Society of Plant Biologist Conference, June 26 - July 1, Merida, Mexico

40. Ondzighi-Assoume C., Christopher D.A., Cho, EJ, Shu S.C., Staehelin L.A. (2007) During Biogenesis of Nucellus Cells^[1] in Developing Seeds, Arabidopsis Protein Disulfide^[1] Isomerase 5 Traffics Together with Cysteine^[1] Proteases to Protein Storage and Lytic Vacuoles. American Society of Plant Biology & Botany Joint Congress, July 7-11, Chicago, IL

39. Ondzighi-Assoume C., Christopher D.A., Shu S.C., Staehelin L.A. 2006. Characterization and immunolocalization of two isoforms of protein disulfide isomerase AtPDI5 and AtPDI7 in Arabidopsis. Published Abstract. American Soc. Plant Biologists Conference, Boston, MA. Aug. 5-9.

38. Matsumoto K.O., Neuteboom, L., Christopher D.A. 2006. Expression and biochemical characterization of a novel pineapple cystatin. Published Abstract. American Soc. Plant Biologists Conference, Boston, MA. Aug. 5-9.

37. Lu, DP, Christopher, D.A. 2006. Immunolocalization of protein disulfide isomerase to Arabidopsis thaliana chloroplasts and its association with starch granule biogenesis. Published Abstract. American Soc. Plant Biologists Conference, Boston, MA. Aug. 5-9.

36. Porter B.W., Aizawa K., Zhu J., Christopher, D.A. 2006. Identification and characterization of root cDNAs and analysis of their differential expression in papaya (*Carica papaya* L.) Published Abstract. American Soc. Plant Biologists Conference, Boston, MA. Aug. 5-9.

35. Christopher D.A. Borsics T, Ondzighi-Assoume, C. Staehelin L.A. 2006. Plasma membrane localization, genetic complementation, and function of CNGC10, a calmodulin-binding potassium channel of *Arabidopsis*. Published Abstract. American Soc. Plant Biologists Conference, Boston, MA. Aug. 5-9.

34. Christopher, D.A. Borsics, T., Penner, R., Ondzighi-Assoume, C., Staehelin, L.A. (2006) AtCNGC10, a calmodulin-binding, cGMP-regulated potassium channel of Arabidopsis localizes to the plasma membrane in plant and HEK cells and confers tolerance to Na⁺ and Cs⁺ in a yeast K⁺ uptake mutant. Keystone Symposium on "Plant Responses to Abiotic Stress." Copper Mountain, CO. April 8-13, 2006.

33. Matsumoto, K. Neuteboom, L. and Christopher, D.A. (2006) Expression and Biochemical Characterization of a Novel Pineapple Cystatin. BIO Pacific Rim Summit on Industrial Biotechnology and Bioenergy. Honolulu, HI Jan.12-13.

32. Christopher, D.A., and Borsics, T. 2005. A Calmodulin- and cGMP-modulated K⁺ channel, AtCNGC10, regulates potassium uptake, palisade cell size and the rate of root gravitropism in Arabidopsis. Plant Cell Signaling: In vivo and omics approaches. Sante Fe, NM. Feb. 1-6.

31. Chinnasri, B., Christopher, D.A. and Sipes, B.S. 2005. Evidence for the induction of SAR by Acibenzolar in cultivated pineapple. 2004. 5th International Pineapple Symposium, Port Alfred, S.Africa, April 11-15.

30. Christopher, D.A. 2004. Plenary Speaker "Pineapple Genomics, Economics, and Applied Research." International Conference on Crassulacean Acid Metabolism, Tahoe City, CA, July 29- Aug 1, 2004.

29. Christopher, D.A., and Lu, D.-P. 2004. Immunolocalization of a protein disulfide isomerase to chloroplasts of *Arabidopsis* and its association with starch granule biogenesis. Published Abstract. American Soc. Plant Biologists Conference, Lake Buena Vista, FL. July 24-29, 2004.

28. Borsics, T., Christopher, D.A. 2004. A cyclic nucleotide-gated, calmodulin-binding potassium channel involved in several developmental processes in *Arabidopsis thaliana*. Published Abstract. American Soc. Plant Biologists Conference, Lake Buena Vista, FL. July 24-July 29.

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27. Christopher, D.A., and Lu, D.-P. 2004. "A chloroplast-localized protein disulfide isomerase and redox-regulated processes involved in plant adaptation to high light stress." Published Abstract. Keystone Symposia: Plant Responses to Abiotic Stress. Sante Fe, NM. Feb. 19-24.

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Students conducting research (499 and 699) with David Christopher (2016 -2019)

Fall 2019

UG Student name	499 Cr
Aquino, Draven L.	3.000
Dam, Nghi T.	4.000
Iwai, Kaela K.	3.000
Yokono, Courtnie A.	3.000
Hallett, Victoria L.	3.000
Ho, Richard	4.000
Mattos, Jessica A.	3.000

Graduate Student Name	699 or 700 cr
Carrillo, Rina M.	5 cr

Spring 2019

UG Student name	499 Cr
Ho, Richard	4.000
Masuda, Jaymie M.	3.000

Graduate Student Name	699 or 700 cr
Carrillo, Rina M.	2 cr

Fall 2018

Graduate Student Name	699 or 700 cr
Carrillo, Rina M.	3 cr
Feldeverd, Elizabeth M.	1 cr

Spring 2018

Undergrad Student Name	499 cr
Cuevas, Leinaala S.	3 cr
Lynn, Jacob G.	4 cr
Paterson, April M.	4 cr
Shigano, Brent S.	3 cr

Graduate Student Name	699 cr
Carrillo, Rina M.	2 cr
Feldeverd, Elizabeth M.	8 cr

Fall 2017

Undergrad Student	499 cr
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Ault, Larissa K.	4
Cuevas, Leinaala S.	3
Kurizaki, Royce T.	4

Graduate Student Name	699 cr
Carrillo, Rina M.	1 cr
Feldeverd, Elizabeth M.	3 cr

Spring 2017

Undergrad Student Name	499 cr
Kurizaki, Royce T.	2 cr

Graduate Student Name	699 cr
Loristo, Jarin	3 cr
Feldeverd, Elizabeth M.	3 cr

Fall 2016 499 cr

Graduate Student Name	699 cr or 700
Rick Shimshock	1 cr MBBE 700
Feldeverd, Elizabeth M.	3 cr MBBE 699

Spring 2016

Undergrad Student Name	499 cr
Barela, Cheyenne K.	3 cr
Sodetani, Alec F.	2 cr