CURRICULUM VITA

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POSITIONS

2007-present	Distinguished Professor of Biochemistry Department of Biochemistry, Purdue University
2008-2015	Head Department of Biochemistry, Purdue University
2000-2007	Professor Department of Biochemistry, Purdue University
1997-2000	Associate Professor Department of Biochemistry, Purdue University
1993-1997	Assistant Professor Department of Biochemistry, Purdue University
1990-93	Adjunct Research Associate DOE Plant Research Laboratory, Michigan State University Supervisor: Dr. Chris Somerville
1984-85	Senior Research Technician Division of Microbiology and Plant Cell Culture, Allelix Inc. Mississauga, Ontario

EDUCATION

1985-89	Ph.D. (Chemistry) Department of Chemistry and Biochemistry, University of Guelph Supervisor: Dr. B.E. Ellis
1982-84	M.Sc. (Botany) Department of Botany, University of Guelph Supervisor: Dr. B.E. Ellis

MEMBERSHIPS
American Society of Plant Biologists
American Association for the Advancement of Science

HONORS AND AWARDS

2014	College of Agriculture TEAM Award
2011	Purdue University Herbert Newby McCoy Award
2006-2007	Richard L. Kohls Outstanding Undergraduate Teacher Award (College of Agriculture)
2005-2006	Outstanding Undergraduate Teacher Award (Department of Biochemistry)
2002	Fellow, American Association for the Advancement of Science
2001	Purdue University Agricultural Research Award
1999	Purdue University Faculty Scholar
1997	Outstanding Undergraduate Teacher Award (Department of Biochemistry)

PUBLICATIONS (in refereed journals)

Citation information available at http://scholar.google.com/citations?user=JVaiqakAAAAJ&hl=en

1. Jaini R, Wang P, Dudareva N, Chapple C, Morgan HA. (2017) Targeted metabolomics of the phenylpropanoid pathway in Arabidopsis thaliana using reversed phase liquid chromatography coupled with tandem mass spectrometry. Phytochem Anal, *in press*.
2. Lee S, Mo H, Kim JI, Chapple C. Genetic engineering of Arabidopsis to overproduce disinapoyl esters, potential lignin modification molecules. Biotech Biofuels, *in press*.
3. Shuai L, Amiri MT, Questell-Santiago YM, Héroguel F, Li Y, Kim H, Meilan R, Chapple C, Ralph J, Luterbacher JS (2016) Formaldehyde stabilization facilitates lignin monomer production during biomass depolymerization. Science **354**, 329-333.
4. Liu J, Kim JI, Cusumano JC, Chapple C, Venugopalan N, Fischetti RF, Makowski L. (2016) The impact of alterations in lignin deposition on cellulose organization of the plant cell wall. Biotech. Biofuels, 9:126, DOI: 10.1186/s13068-016-0540-z.
5. Brock MT, Lucas LK, Anderson NA, Rubin MJ, Markelz RJC, Covington MF, Devisetty UK, Chapple C, Maloof JN, Weinig C. (2016) Genetic architecture, biochemical underpinnings, and ecological impact of floral UV patterning. Mol Ecol **25**, 1122-1140.
6. Shi J, Pattathil S, Ramakrishnan P, Anderson NA, Kim JI, Venkatachalam S, Hahn MG, Chapple C, Simmons BA, Singh S. (2016) Impact of engineered lignin composition on biomass recalcitrance and ionic liquid pretreatment efficiency. Green Chemistry, 2016, DOI: 10.1039/C6GC01193D
7. Jacobi JL, Yang B, Li X, Menze AK, Laurentz SM, Janle EM, Ferruzzi MG, McCabe GP, Chapple C, Kirchmaier AL. (2016) Impacts on sirtuin function and bioavailability of the dietary bioactive compound dihydrocoumarin. PLoS ONE 11(2): e0149207.
8. Kim T, Kim JI, Visbal-Onufrak MA, Chapple C, and Kim YL. (2016) Nonspectroscopic imaging for quantitative chlorophyll sensing. J Biomed Optics **21**: 16008.
9. Provart N, Alonso J, Assmann S, Bergmann D, Brady S, Brkljacic J, Browse J, Chapple C, Colot, V, Cutler S, Dangl J, Ehrhardt,D, Friesner J, Frommer W, Grotewold E, Meyerowitz E, Nemhauser J, Nordborg M, Pikaard C, Shanklin J, Somerville C, Stitt M, Torii K, Waese J, Wagner D, McCourt P. (2016) 50 years of Arabidopsis research: highlights and future directions. New Phytol **209**: 921-944.
10. Li Y, Kim JI, Pysh L, Chapple C (2015) Four isoforms of Arabidopsis thaliana 4-coumarate: CoA ligase (4CL) have overlapping yet distinct roles in phenylpropanoid metabolism. Plant Physiol. 169: 2409-2421.
11. Anderson NA, Bonawitz ND, Nyffeler KE, Chapple C. (2015) Loss of FERULATE 5-HYDROXYLASE leads to Mediator-dependent inhibition of soluble phenylpropanoid biosynthesis in Arabidopsis. Plant Physiol, **169**: 1557-1567
12. Liu B, Wang P, Kim JI, Zhang D, Xia Y, Chapple C, Cheng JX (2015) Vibrational fingerprint mapping reveals spatial distribution of functional groups of lignin in plant cell wall. Anal Chem **87**: 9436-9442
13. Anderson NA, Tobimatsu Y, Ciesielski PN, Ximenes E, Ralph J, Donohoe BS, Ladisch M, Chapple C. (2015) Manipulation of guaiacyl and syringyl monomer biosynthesis in an Arabidopsis cinnamyl alcohol dehydrogenase mutant results in atypical lignin biosynthesis and modified cell wall structure. Plant Cell **27**: 2195-2209.
14. Strauch RC, Svedin E, Dilkes B, Chapple C, Li X (2015) Discovery of a novel amino acid racemase through exploration of natural variation in Arabidopsis thaliana. Proc Natl Acad Sci USA **112**: 11726-11731.
15. Kim JI, Dolan WL, Anderson NA, Chapple C. (2015) Indole glucosinolate biosynthesis limits phenylpropanoid accumulation in Arabidopsis thaliana. Plant Cell **27**: 1529-1546. *Highlighted in Faculty of 1000.*
16. Parsell T, Yohe S, Degenstein J, Jarrell T, Klein I, Gencer E, Hewetson B, Hurt M, Kim JI, Choudhari H, Saha B, Meilan R, Mosier N, Ribeiro F, Delgass WN, Chapple C, Kenttämaa HI, Agrawal R, Abu-Omar MM. (2015) A synergistic biorefinery based on catalytic conversion of lignin prior to cellulose starting from lignocellulosic biomass. Green Chemistry **17**: 1492-1499.
17. Pekel AY, Kim JI, Chapple C, Adeola O. (2015) Nutritional characteristics of camelina meal for 3-

week-old broiler chickens. Poult Sci. **94**: 371–378
18. Li X, Svedin E, Mo H, Atwell S, Dilkes BP, and Chapple C. (2014) Exploiting natural variation of secondary metabolism identifies a gene controlling the glycosylation diversity of dihydroxybenzoic acids in Arabidopsis thaliana. Genetics **198**: 1267-1276
19. Block A, Widhalm JR, Fatihia A, Cahoon RE, Wamboldt Y, Elowskya C, Mackenziea SA, Cahoon EB, Chapple C, Dudareva N, Basset GJ. (2014) The origin and biosynthesis of the benzenoid moiety of ubiquinone (Coenzyme Q) in Arabidopsis. Plant Cell **26**: 1938-1948.
20. García JR, Anderson NA, Le-Feuvre R, Iturra C, Elissetche J, Chapple C, Valenzuela S (2014) Rescue of syringyl lignin and sinapate ester biosynthesis in *Arabidopsis thaliana* by a coniferaldehyde 5-hydroxylase from *Eucalyptus globulus.* (2014) Plant Cell Reports **33**: 1263-1274.
21. Bonawitz ND, Kim JI, Tobimatsu Y, Ciesielski PN, Anderson NA, Ximenes E, Maeda J, Ralph J, Donohoe BS, Ladisch M, Chapple C. (2014) Disruption of Mediator rescues the stunted growth of a lignin-deficient Arabidopsis mutant. Nature **509**: 376-380.
22. Ciesielski PN, Resch MG, Hewetson B, Killgore JP, Curtin A, Anderson N, Chiaramonti AN, Hurley DC, Sanders A, Himmel ME, Chapple C, Mosier N, Donohoe BS. (2014) Engineering plant cell walls: tuning lignin monomer composition for deconstructable biofuel feedstocks or resilient biomaterials. Green Chemistry **16**: 2627–2635.
23. Kim JI, Ciesielski PN, Donohoe BS, Chapple C, Li X. (2014) Chemically induced conditional rescue of the *reduced epidermal fluorescence8* mutant of Arabidopsis reveals rapid restoration of growth and selective turnover of secondary metabolite pools. Plant Physiol. **164**: 584-595.
24. Liu J, Inouye H, Venugopalan N, Fischetti RF, Gleber SC, Vogt S, Cusumano JC, Kim J-I, Chapple C, Makowski L (2013) Tissue specific specialization of the nanoscale architecture of Arabidopsis. J. Struct. Biol. **184**: 103-114.
25. Tobimatsu Y, Wagner, A, Donaldson L, Mitra P, Niculaes C, Dima O, Kim J-I, Anderson N, Loque D, Boerjan W, Chapple C, Ralph J. (2013) Visualization of plant cell wall lignification using fluorescence-tagged monolignols. Plant J **76**: 357-366.
26. Venkata BP, Lauter N, Li X, Chapple C, Krupke C, Johal G, Moose S (2013) *crw1* - A novel maize mutant highly susceptible to foliar damage by the western corn rootworm beetle. PLoS ONE 8: e71296. doi:10.1371/journal.pone.0071296
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28. Lee S, Kaminaga Y, Cooper B, Pichersky E, Dudareva N, Chapple C. (2012) Benzoylation and sinapoylation of glucosinolate R-groups in Arabidopsis. Plant J. 72:411-422.
29. Weng JK, Li Y, Mo H, Chapple C. (2012) Assembly of an evolutionarily new pathway for α-pyrone biosynthesis in Arabidopsis. Science **337**: 960-964.
30. Mansfield SD, Kang K-Y, Chapple C. (2012) Designed for deconstruction – Poplar trees altered in cell wall lignification improve the efficacy of bioethanol production. New Phytol. **194**: 91-101.
31. Bonawitz ND, Soltau WL, Blatchley MR, Powers BL, Hurlock AK, Seals LA, Weng J-K, Stout J, Chapple C. (2012) REF4 and RFR1, subunits of the transcriptional coregulatory complex Mediator, are required for phenylpropanoid homeostasis in Arabidopsis. J. Biol. Chem. **287**: 5434-5445.
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34. Weng J-K, Mo H, Chapple C (2010) Over-expression of F5H in COMT-deficient Arabidopsis leads to enrichment of an unusual lignin and disruption of pollen wall formation. Plant J. **64**: 898-911
35. Li X, Ximenes E, Kim Y, Slininger M, Meilan R, Ladisch M, Chapple C. (2010) Lignin monomer composition impacts Arabidopsis cell wall degradability following liquid hot-water-pretreatment. Biotechnol. Biofuels, **3**:27
36. Li X, Bonawitz ND, Weng J-K, Chapple C (2010) The growth reduction associated with repressed lignin biosynthesis in Arabidopsis thaliana is independent of flavonoids. Plant Cell **22**: 1620-1632.
37. Weng J-K, Akiyama T, Bonawitz ND, Li X, Ralph J, Chapple C (2010) Convergent evolution of syringyl lignin biosynthesis via distinct pathways in the lycophyte Selaginella and flowering plants. Plant Cell **22**: 1033-1045
38. Li X, Bergelson J, Chapple C (2010) The *ARABIDOPSIS* accession Pna-10 is a naturally occurring *sng1* deletion mutant. Mol. Plant **3**: 91-100
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40. Stewart JJ, Akiyama T, Chapple C, Ralph J, Mansfield SD (2009) The effects on lignin structure of over-expression of ferulate 5-hydroxylase in hybrid poplar. Plant Physiol, 150: 621-635
41. Weng J-K, Banks JA, Chapple C (2008) Parallels in lignin biosynthesis: a study in *Selaginella moellendorffii* reveals convergence across 400 million years of evolution. Commun Integr Biol 1: 20-22.
42. Weng J-K, Li X, Stout J, Chapple C (2008) Independent origins of syringyl lignin in vascular plants. Proc Natl Acad Sci USA **105**: 7887-7892
43. Stout J, Romero-Severson E, Ruegger MO, Chapple C (2008) Semi-dominant mutations in *Reduced Epidermal Fluorescence 4* reduce phenylpropanoid content in Arabidopsis. Genetics **178**: 2237-2251
44. Coleman HD, Park J-Y, Nair R, Chapple C, and Mansfield SD (2008) RNAi-mediated suppression of p-coumaroyl-CoA 3'-hydroxylase in hybrid poplar impacts lignin deposition and soluble secondary metabolism. Proc Natl Acad Sci USA **105**: 4501-4506
45. Fraser CM, Thompson MG, Shirley AM, Ralph J, Schoenherr JA, Sinlapadech T, Hall MC, Chapple C. (2007) Related Arabidopsis serine carboxypeptidase-like sinapoylglucose acyltransferases display distinct but overlapping substrate specificities. Plant Physiol **144**: 1986-1999
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47. Wang W, Tanurdzic M, Luo M, Sisneros N, Kim HR, Weng JK, Kudrna D, Mueller C, Arumuganathan K, Carlson J, Chapple C, de Pamphilis C, Mandoli D, Tomkins J, Wing RA, Banks JA (2005) Construction of a bacterial artificial chromosome library from the spikemoss *Selaginella moellendorffii*: A resource for vascular plant comparative genomics. BMC Plant Biology **5**:10
48. Weng JK, Tanurdzic M, Chapple C. (2005) Functional analysis and comparative genomics of expressed sequence tags from the lycophyte *Selaginella moellendorffii*. BMC Genomics **6**:85
49. Fraser CM, Rider LW, Chapple C (2005) An expression and bioinformatics analysis of the Arabidopsis serine carboxypeptidase-like gene family. Plant Physiol **138**: 1136-1148.
50. Humphreys JM, Chapple C (2004) Immunodetection and quantification of cytochromes P450 using epitope tagging: immunological, spectroscopic and kinetic analysis of cinnamate 4-hydroxylase. J Immun Methods **292**: 97-107
51. Hemm MR, Rider SD, Ogas J, Murry DJ, Chapple C (2004) Light induces phenylpropanoid metabolism in Arabidopsis roots. Plant J **38**: 765-778
52. Rider SD, Hemm MR, Hostetler HA, Li H-C, Chapple C, Ogas J (2004) Metabolic profiling of the Arabidopsis pickle mutant reveals selective derepression of embryonic traits. Planta **219**: 489-499
53. Nair RB, Bastress KL, Ruegger MO, Denault JW, Chapple C (2004) The Arabidopsis *REF1* gene

encodes an aldehyde dehydrogenase involved in ferulic acid and sinapic acid biosynthesis. Plant Cell **16**: 544-554
54. Huntley SK, Ellis D, Gilbert M, Chapple C, Mansfield SD (2003) Significant increases in pulping efficiency in C4H-F5H-transformed poplars: improved chemical savings and reduced environmental toxins. J Agric Food Chem **51**: 6178-6183
55. Shirley AM, Chapple C (2003) Biochemical characterization of sinapoylglucose:choline sinapoyltransferase, a serine carboxypeptidase-like protein that functions as an acyltransferase in plant secondary metabolism. J Biol Chem **278**: 19870-19877
56. Hemm MR, Ruegger MO, Chapple C (2003) The Arabidopsis *ref2* mutant is defective in the gene encoding CYP83A1 and shows both phenylpropanoid and glucosinolate phenotypes. Plant Cell **15**: 179-194
57. Franke R, Hemm MR, Denault JW, Ruegger MO, Humphreys JM, Chapple C (2002) Changes in secondary metabolism and deposition of an unusual lignin in the *ref8* mutant of Arabidopsis. Plant J **30**: 47-59
58. Franke R, Humphreys JM, Hemm MR, Denault JW, Ruegger MO, Cusumano JC, Chapple C (2002) The Arabidopsis *REF8* gene encodes the 3-hydroxylase of phenylpropanoid metabolism. Plant J **30**: 33-45
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60. Ruegger M, Chapple C. (2001) Mutations that reduce sinapoylmalate accumulation in *Arabidopsis thaliana* define loci with diverse roles in phenylpropanoid metabolism. Genetics **159**: 1741-1749
61. Shirley AM, McMichael CM, Chapple C. (2001) The *sng2* mutant of Arabidopsis is defective in the gene encoding the serine carboxypeptidase-like protein sinapoylglucose:choline sinapoyltransferase. Plant J **28**: 83-94
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63. Watson CJW, Froehlich JE, Josefsson CA, Chapple C, Durst F, Beveniste I, Coolbaugh RC. (2001) Localization of CYP86B1 in the outer envelope of chloroplasts. Plant Cell Physiol. **42**: 873-878
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65. Franke R, McMichael CM, Shirley AM, Meyer K, Cusumano JC, Chapple C. (2000) Modified lignin in tobacco and poplar plants overexpressing the Arabidopsis gene encoding ferulate 5-hydroxylase. Plant J **22**: 223-234
66. Marita, JM, Ralph J, Hatfield RD, Chapple C (1999) NMR characterization of lignin in Arabidopsis altered in the activity of ferulate 5-hydroxylase. Proc Natl Acad Sci USA **96**: 12328-12332.
67. Humphreys JM, Hemm MR, Chapple C (1999) New routes for lignin biosynthesis defined by biochemical characterization of recombinant ferulate 5-hydroxylase, a multifunctional cytochrome P450-dependent monooxygenase. Proc Natl Acad Sci USA, **96**: 10045-10050
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69. Ruegger MO, Meyer K, Cusumano JC, Chapple C. (1999) Regulation of ferulate-5-hydroxylase expression in Arabidopsis in the context of sinapate ester biosynthesis. Plant Physiol **119**: 101-110
70. Meyer K, Shirley AM, Cusumano JC, Bell-Lelong DA, Chapple C (1998) Lignin monomer composition is determined by the expression of a cytochrome P450-dependent monooxygenase in Arabidopsis. Proc Natl Acad Sci USA **95**: 6619-6623
71. Lee D, Meyer K, Chapple C, Douglas C (1997) Down-regulation of 4-coumarate:CoA ligase (4CL) in Arabidopsis: effect on lignin composition and implications for the control of monolignol biosynthesis. Plant Cell **9**: 1985-1998
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81. Chapple CCS, Glover JR, Ellis BE (1990) Purification and characterization of methionine:glyoxylate aminotransferase from *Brassica carinata* and *Brassica napus*. Plant Physiol **94**: 1887-1896
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85. Glover J, Chapple C, Rothwell S, Tober I, Ellis BE (1988) Allylglucosinolate biosynthesis in *Brassica carinata* seedlings. Phytochemistry **27**: 1345-1348
86. Chapple CCS, Peterson RL (1987) Root structure in the fern *Platycerium bifurcatum* (Cav.) C. Chr. (Polypodiaceae) Bot Gaz **148**: 180-187
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88. Chapple CCS, Walker MA, Ellis BE (1986) Plant tyrosine decarboxylase can be strongly inhibited by L-α-aminooxy-β-phenylpropionic acid. Planta **167**: 101-105
89. Chapple CCS, Ellis BE (1984) Preparative and analytical liquid chromatography of complex caffeoyl esters. J Chromatog **285**: 171-177

BOOK CHAPTERS AND REVIEW ARTICLES

1. Dolan WL, Chapple C (2016) Conservation and divergence of Mediator structure and function: insights from plants Plant and Cell Physiology, in press.
2. Wang P, Dudareva N, Morgan JA, Chapple C. (2015) Genetic manipulation of lignocellulosic biomass for bioenergy. Curr Opin Chem Biol **29**: 32-39
3. Anderson NA, Chapple C. (2014) Perturbing lignin biosynthesis: metabolic changes in response to manipulation of the phenylpropanoid pathway. In Recent Advances in Polyphenol Research, 39-59 John Wiley and Sons.
4. Bonawitz ND, Chapple C (2013) Can genetic engineering of lignin deposition be accomplished without an unacceptable yield penalty? Current Opinion in Biotechnology, **24**: 336-343.
5. Fraser, CM, Chapple C (2011) The phenylpropanoid pathway in Arabidopsis. The Arabidopsis Book **9**: e0152.
6. Li X, Chapple C (2010) Understanding lignification: challenges beyond monolignol biosynthesis. Plant Physiol **154**: 449-452

7. Bonawitz ND, Chapple C (2010) The genetics of lignin biosynthesis: connecting genotype to phenotype. Annu Rev Gen **44**: 337-363
8. Weng JK, Chapple C (2010) The origin and evolution of lignin biosynthesis. New Phytol, **187**: 273-285
9. Weng J-K, Li X, Bonawitz ND, Chapple C (2008) Emerging strategies of lignin engineering and degradation for cellulosic biofuel production. Curr Opin Biotech **19**: 166-172
10. Li X, Weng J-K, Chapple C (2008) Improvement of biomass through lignin modification. Plant J **54**: 569-581
11. Chapple C, Ladisch M, Meilan R. (2007) Loosening lignin's grip on biofuel production. Nat Biotechnol **25**: 746-748
12. Chapple C, Campbell MM. (2007) Factors impacting plant productivity. Curr Opin Plant Biol **10**:217-219 (prefatory article for issue edited by CC and MMC)
13. Stout J, Chapple C (2004) The phenylpropanoid pathway in Arabidopsis: lessons learned from mutants in sinapate ester biosynthesis *in* Recent Advances in Phytochemistry, Volume 38. Secondary Metabolism in Model Systems (J.T. Romeo, ed.), Elsevier Press, Amsterdam, The Netherlands pp. 39-67
14. Humphreys JM, Chapple C (2002) Rewriting the lignin roadmap. Curr Op Plant Biol **5**: 224-229
15. Hemm MR, Herrmann KM, Chapple C. (2001) AtMYB4: a transcription factor general in the battle against UV. Trends Plant Sci. **6**: 135-136
16. Humphreys J, Chapple C (2000) Molecular pharming with plant P450s. Trends Plant Sci. **5**: 271-272
17. Chapple C (1998) Molecular-genetic analysis of plant cytochrome P450-dependent monooxygenases. Annu Rev Plant Biochem Plant Mol Biol **49**: 311-343
18. Chapple C, Carpita N (1998) Plant cell walls as targets for biotechnology. Curr Opin Plant Biol **1**: 179-185
19. Chapple CCS, Shirley BW, Zook M, Hammerschmidt R, Somerville SC (1994) Secondary metabolism in Arabidopsis *in* Arabidopsis (C. Somerville and E. Meyerowitz eds.), Cold Spring Harbor Press pp. 989-1030
20. Chapple CCS (1994) Analysis of secondary metabolism in Arabidopsis *in* Recent Advances in Phytochemistry, Volume 28. Genetic Engineering of Plant Secondary Metabolism (B.E. Ellis, G.W. Kuroki and H. Stafford, eds.), Plenum Press, NY pp. 251-274
21. Chapple CCS, Ellis BE (1992) Secondary metabolite profiles of crucifer seeds. Biogenesis, role, and prospects for directed modification *in* Current Topics in Plant Physiology, Volume 7. Biosynthesis and Molecular Regulation of Amino Acids in Plants (B.K. Singh, H.E. Flores and J.C. Shannon, eds.), ASPP Press, pp. 239-248
22. Chapple CCS, Ellis BE (1991) *Syringa vulgaris* L. (Common Lilac): In vitro culture and the occurrence and biosynthesis of phenylpropanoid glycosides *in* Biotechnology in Agriculture and Forestry, Vol. 15, Medicinal and Aromatic Plants III (Y.P.S. Bajaj, ed.) Springer Verlag, Berlin, pp. 478-499

INVITED SEMINARS PRESENTED

1. Global Climate and Energy Project, Stanford University, October 2016, Biomass conversion: opportunities in lignin management.
2. Pan American Bioenergy Conference, Santa Fe NM, August 2016. The role of the Mediator complex in the regulation of lignin biosynthesis
3. Canadian Society for Plant Biology, Queens University, June 2016. Exploring the limits of lignin modification.
4. Microbial and Plant Systems Modulated by Secondary Metabolites Meeting, Joint Genome Institute, May 2016. How do plants mediate crosstalk between biochemical pathways?
5. Department of Biochemistry, Michigan State University, October 2015. How do plants mediate crosstalk between biochemical pathways?
6. Gordon Conference on Plant Cell Walls. July, 2015. Transcriptional feedback mechanisms governing lignin biosynthesis in Arabidopsis.
7. Department of Biochemistry, University of Missouri, February 2015, Transcriptional regulatory mechanisms that impact metabolism in Arabidopsis.

8. Global Climate and Energy Project, Stanford University, October 2014, Lignin Management Optimizing Yield in Lignin Modified Plants.
9. University of Copenhagen, Copenhagen Denmark, August 2014. Interplay between the regulation of lignin biosynthesis, glucosinolate, and anthocyanins.
10. Lignin 2014 – biosynthesis and utilization, Umea Sweden, August 2014. Transcriptional feedback mechanisms that impact lignin biosynthesis in Arabidopsis
11. 25th International Conference on Arabidopsis Research (ICAR 2014) University of British Columbia, Vancouver, Canada, July 2014. Transcriptional feedback mechanisms that impact lignin biosynthesis in Arabidopsis.
12. Danforth Center, St. Louis MO, May 2014. Mediator-dependent metabolic regulatory circuits in Arabidopsis.
13. Department of Biochemistry, University of Wisconsin, May 2014. Evidence for metabolite-driven transcriptional feedback mechanisms in Arabidopsis.
14. Department of Biochemistry, Purdue University, November 2013. Evidence for metabolite-driven feedback mechanisms in Arabidopsis.
15. 8th Annual Glycoscience Symposium, University of Georgia, April 2014. Evidence for metabolite-driven transcriptional feedback mechanisms in Arabidopsis.
16. Department of Biochemistry, Purdue University, November 2013. Evidence for metabolite-driven feedback mechanisms in Arabidopsis.
17. Florida Genetics Symposium, University of Florida, Gainesville FL. October 2013. Genetic analysis of phenylpropanoid metabolism in Arabidopsis.
18. DOE Contractor's Meeting, North Bethesda MD. February 2013. Modeling and Manipulating Phenylpropanoid Pathway Flux for Bioenergy.
19. Great Lakes Bioenergy Research Center, Madison WI. November 2012. Manipulation of lignin biosynthesis in plants: the low hanging fruit in feedstock improvement.
20. DOE Contractor's Meeting, Potomac MD. October 2012. Regulation of carbon allocation to phenylpropanoid metabolism: the role of components of the mediator complex.
21. Frontiers in Biorefining 2012, St. Simon's Island GA. October 2012. Manipulation of lignin biosynthesis in plants: the low hanging fruit in feedstock improvement for the biorefinery.
22. XXVIth International Conference on Polyphenols, Florence Italy. July 2012. Phenylpropanoid metabolism in Arabidopsis.
23. Ohio State University, Columbus OH. June 2012. Redefining the limits of phenylpropanoid metabolic engineering.
24. Gordon Conference on Plant Metabolic Engineering, Waterville Valley NH. July 2011. Mediators of phenylpropanoid homeostasis in Arabidopsis.
25. First International WoW Symposium, University of British Columbia, Vancouver B.C. June 2011. Is dwarfism an obligatory phenotype in lignin down-regulated plants?
26. Bioenergy Systems Research Institute, University of Georgia, Athens GA. April 2011. Using Arabidopsis to learn about lignin.
27. Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg VA, October 2010. A tale of three P450s.
28. ASPB 2010, Montreal PQ, July 2010. Lignin: an extracellular polymer with unique biochemical plasticity.
29. Yale University, New Haven CT, April 2010. Lignification of plant cell walls: a milestone in plant evolution.
30. University of Massachusetts – Amherst, March 2010. Lignification of plant cell walls: a milestone in plant evolution.
31. Global Climate and Energy Project, Stanford University, October 2009. Assembly of a lignin modification toolbox.
32. University of British Columbia, Vancouver BC, May 2009. Lignification of plant cell walls: a milestone in plant evolution.
33. University of Minnesota, Minneapolis MN, April 2009. Genetics and biochemistry of lignin biosynthesis in land plants.
34. University of California - Berkeley, Berkeley CA, November 2008. Genetics and biochemistry of lignin biosynthesis in land plants.
35. Ohio State University, Columbus OH, November 2008. Genetics and biochemistry of lignin

biosynthesis in land plants.

36. University of Wisconsin, Madison WI, October 2008. Developing a toolbox for the modification of plant cell wall biosynthesis.
37. Banff Conference on Plant Metabolism, Banff Alberta, July 2008. What can Selaginella tell us about the evolution of phenylpropanoid metabolism?
38. Gordon Conference on Plant Molecular Biology, Plymouth NH, July 2008. New genes for biomass improvement from a highly divergent plant species.
39. 6th Canadian Plant Genomics Workshop, Toronto, ON June 2008. Independent origins of syringyl lignin in vascular plants.
40. Exxon-Mobil, Annandale PA, November 2007. Biochemical and genetic opportunities for biomass crop improvement.
41. Stanford University, October 2007. Looking beyond Arabidopsis and angiosperms for biomass crop improvement genes.
42. BASF, Raleigh, NC, September 2007. Developing a toolbox for the modification of plant cell wall biosynthesis.
43. Department of Biochemistry, Purdue University, September 2007. Biochemical and genetic opportunities for biomass crop improvement.
44. Department of Horticulture and Landscape Architecture, Purdue University, August 2007. Engineering lignin biosynthesis: approaches, possibilities, and limitations.
45. 18th International Conference on Arabidopsis Research, Beijing China, June, 2007. Looking beyond Arabidopsis and angiosperms for biomass crop improvement genes.
46. Department of Plant Biology, University of Georgia, March 2007. Developing a toolbox for the modification of plant cell wall biosynthesis.
47. Bioenergy Research Group, UC Davis, February 2007. Engineering lignin biosynthesis: approaches, possibilities, and limitations.
48. Ceres Inc., Thousand Oaks Ca, August 2006. Exploring and engineering phenylpropanoid metabolism in Arabidopsis.
49. Monsanto, March 2006. Developing a toolbox for modification of phenylpropanoid metabolism in plants.
50. Department of Agronomy, Purdue University, February 2006. Exploring and engineering phenylpropanoid metabolism in Arabidopsis
51. Dow Agrosciences, January 2006. Developing a toolbox for modification of phenylpropanoid metabolism in plants.
52. Iowa State University, May 2005. Phenylpropanoid mutants of Arabidopsis: rewriting the lignin biosynthetic pathway.
53. Department of Botany, University of Toronto, April 2005. Plant metabolism: the last 400 million years.
54. Department of Biology, IUPUI April 2005. Secondary metabolism in plants: new directions for the phenylpropanoid pathway.
55. Department of Biochemistry, Purdue University, October 2004. Plant metabolism: the last 400 million years.
56. DOE Plant Research Laboratory, Michigan State University, September 2004. Fourteen years of evolution in phenylpropanoid metabolism.
57. Danforth Center, May 2004. Secondary metabolism in Arabidopsis: new directions for the phenylpropanoid pathway.
58. Department of Biology, University of Victoria, February 2004. Secondary metabolism in Arabidopsis: new directions for the phenylpropanoid pathway.
59. Carnegie Institute of Washington, Stanford CA, October 2003. Secondary metabolism in Arabidopsis: new directions for the phenylpropanoid pathway.
60. NSF-VBI-Noble Metabolomics Workshop, Ardmore OK, August 2003. Lessons learned from Arabidopsis phenylpropanoid metabolism: should we expect the unexpected in metabolomics?
61. Phytochemical Society of North America, Peoria IL, July 2003. The Arabidopsis *ref1* mutant reveals an oxidative pathway to hydroxycinnamic acids in plants.
62. University of Michigan, December 2002. Reactions and interactions in Arabidopsis secondary metabolism
63. Gordon Conference on Plant Molecular Biology, Plymouth NH, July 2002. Genetic approaches to

dissecting lignin biosynthesis

64. Salk Institute, San Diego CA. February, 2002. Secondary metabolism mutants of Arabidopsis: a source of genes for understanding and engineering phenylpropanoid metabolism.
65. Phytochemical Society of North America, Oklahoma City, OK August 2001. Sinapate ester deficient mutants of Arabidopsis: a source of genes for the engineering of phenylpropanoid metabolism
66. Gordon Conference on Plant Cell Walls, Meriden NH, August 2000. Mutational analysis of plant cell wall biosynthesis in Arabidopsis
67. Gordon Conference on Plant Regulatory Mechanisms, Henniker NH, July 2000. Mutational analysis and metabolic engineering of the phenylpropanoid pathway in Arabidopsis.
68. 6th International Congress of Plant Molecular Biology, Quebec City, June 2000. Mutational analysis and metabolic engineering of the phenylpropanoid pathway in Arabidopsis.
69. Department of Plant Biology, University of Illinois Urbana Champaign, September 1999. Mutational analysis and metabolic engineering of the phenylpropanoid pathway in Arabidopsis.
70. Pathway Engineering in Plants. York UK, August 1999. Mutational analysis and metabolic engineering of the phenylpropanoid pathway in Arabidopsis.
71. Forestry Biotechnology 99. University of Oxford, UK, July 1999. Phenylpropanoid metabolism in Arabidopsis: biochemistry and biotechnology.
72. The First Annual Symposium on Metabolic Networking in Plants, Iowa State University, IA April 1999. Secondary metabolism in Arabidopsis: biochemistry and biotechnology.
73. Biotechnology Center Seminar Series, University of British Columbia, March 1999. Secondary metabolism in Arabidopsis: biochemistry and biotechnology.
74. The Third Symposium on Molecular Breeding of Woody Plants, Fuchu Japan, August, 1998. The role of ferulate-5-hydroxylase in lignin biosynthesis.
75. Monsanto, St. Louis MO, August, 1998. Modification of lignin composition in plants.
76. Fourth International Symposium on P450 Biodiversity and Biotechnology, Strasbourg France, July, 1998. Manipulation of phenylpropanoid metabolism in plants by modification of ferulate-5-hydroxylase expression.
77. Gordon Conference on Plant-Herbivore Interactions, Ventura CA, February, 1998. The dissection of secondary metabolite biosynthesis in Arabidopsis.
78. E.I. Du Pont de Nemours Experimental Research Station Seminar Series, November, 1997. Secondary metabolism in Arabidopsis: biochemistry and biotechnology.
79. Keystone Symposium on Metabolic Engineering of Transgenic Plants, Copper Mountain, CO, April 1997. Metabolic Engineering of Phenylpropanoid Metabolism in Arabidopsis.
80. Second International Wood Biotechnology Symposium, Canberra, Australia, March 1997. Regulation and manipulation of lignin monomer composition by expression and overexpression of ferulate-5-hydroxylase, a cytochrome P450-dependent monooxygenase required for syringyl lignin biosynthesis.
81. Department of Plant Sciences, University of Arizona, Tucson AZ, November 1996. Cytochrome P450-dependent monooxygenases and their impact on phenylpropanoid metabolism in Arabidopsis.
82. Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg VA, October 1996. Phenylpropanoid metabolism in Arabidopsis.
83. 1996 Midwest Cytochromes P450 Symposium, Purdue University, West Lafayette, IN. September, 1996. Modification of lignin composition in plants by manipulation of ferulate-5-hydroxylase expression.
84. Department of Biology, Indiana-Purdue University, Fort Wayne IN. October 1995. Biochemical genetics of secondary metabolism in Arabidopsis.
85. Seventh Cell Wall Meeting, Santiago de Compostela, Spain. September 1995. Cloning of a cytochrome P450-dependent monooxygenase gene required for syringyl lignin biosynthesis in *Arabidopsis*.
86. Phytochemical Society of North America, Sault Ste. Marie, Ontario. August 1995. Cloning of the gene encoding ferulate-5-hydroxylase from *Arabidopsis* by T-DNA tagging.
87. Sixth International Meeting on Arabidopsis Research, Madison, WI. June 1995. Using Arabidopsis to understand the biochemistry of wood.
88. DowElanco, Indianapolis IN. November, 1994. Cell walls and secondary metabolism in

Arabidopsis.

89. Department of Horticulture Fall Seminar Series, Purdue University, West Lafayette, IN. October, 1993. Cell wall mutants of *Arabidopsis*.
90. 1993 Midwest Cytochromes P450 Symposium, Purdue University, West Lafayette, IN. September, 1993. Characterization of an *Arabidopsis* mutant defective in ferulate-5-hydroxylase, a P450 monooxygenase.
91. Noble Foundation, Plant Biology Division, Ardmore, OK. January 1993. The use of mutants to dissect the structure and function of the cell wall.
92. Keystone Symposium, The Extracellular Matrix of Plants, Santa Fe, NM. January 1993. The use of mutants to dissect the structure and function of the cell wall. Abstracted in Jour. Cell. Biochem. 17A: 7.
93. Society for Experimental Biology 1992 Meeting, Lancaster, UK. April, 1992. Mutants of *Arabidopsis* with altered cell wall composition. Abstracted in Jour. Exp. Bot. 43 (250): 18.
94. John Innes Institute, Norwich, UK. April 1992. Mutants of *Arabidopsis* with altered cell wall composition.
95. ICI Seeds, Bracknell, UK. April 1992. Mutants of *Arabidopsis* with altered cell wall composition.
96. Universite Paul Sabbatier, Equipe Lignine, Toulouse, France. March, 1992. Mutants of *Arabidopsis* with altered cell wall composition.
97. International Society for Plant Molecular Biology Third International Congress, Tucson, AZ. October 1991. Mutants of *Arabidopsis thaliana* defective in sinapoyl malate biosynthesis.

THESES

Chapple, C.C.S. 1989. Enzymology of glucosinolate biosynthesis in *Brassica*. Ph.D. Thesis, Department of Chemistry and Biochemistry, University of Guelph.

Chapple, C.C.S. 1984. Phenylpropanoid metabolism in *Syringa vulgaris* L. tissue cultures. M.Sc. Thesis, Department of Botany, University of Guelph.

GRANT SUPPORT

Pending or Active

Department of Energy, Office of Energy Research, “Secondary Metabolism in Arabidopsis: The Role of REF4” 09/01/16-08/31/18, $300,000

Stanford Global Climate and Energy Project (C. Chapple, J. Ralph, X. Li, C. Halpin, W. Boerjan) “Lignin management: optimizing yield in lignin-modified plants” 03/01/13-02/28/17, $626,398 (Purdue University share)

Department of Energy, Office of Biological and Environmental Research, (C. Chapple, N. Dudareva, J. Morgan) “Modeling and Manipulating Phenylpropanoid Pathway Flux for Bioenergy”, 9/1/12-8/31/17, $5,274,045.

Department of Energy, Office of Energy Research, “Center for Catalytic Conversion of Biomass to Bioenergy” 08/01/2014-07/31/2018, $12,000,000. Maureen McCann PI.

Past extramural grants awarded as principal investigator

Department of Energy, Office of Energy Research, “Regulation of Carbon Allocation to Phenylpropanoid Metabolism” 09/01/11-08/31/16, (in no cost extension) $421,478

National Science Foundation, “Arabidopyrones: a new group of specialized plant metabolites from Arabidopsis”, 08/01/11-07/31/15, $553,626

Department of Energy, Office of Energy Research, “Secondary Metabolism in Arabidopsis: The Role of REF4” 09/01/07-08/31/11, $390,000

Stanford Global Climate and Energy Project (Chapple, C., Friedman A.)
"Assembly of a lignin modification toolbox" 07/14/08-07/13/11, $1,930,000

Department of Energy, (Chapple, C., PI; Meilan, R., Ladisch, M., co-PIs)
"Manipulation of lignin biosynthesis to maximize ethanol production from Populus feedstocks"
09/01/06-08/31/09, $1,400,000

Department of Energy, Office of Energy Research, "Secondary Metabolism in Arabidopsis"
07/01/06-06/30/07, $100,000

National Science Foundation "Acquisition of Metabolic Profiling Instrumentation at Purdue University. 10/01/04 - 09/30/08 $1,199,430.

Department of Energy, Office of Energy Research, "Secondary Metabolism in Arabidopsis"
07/01/03-06/30/06, $360,000

National Science Foundation, "Identification and characterization of the last unknown catalyst in lignin biosynthesis." 3/1/2001-2/28/2003, $462,925.

National Science Foundation, "Serine carboxypeptidase-like proteins: misunderstood catalysts in plant metabolism." 3/1/2001-2/28/2003, $495,804.

Department of Energy, Office of Energy Research, "Phenylpropanoid metabolism in Arabidopsis: enzyme characterization, gene regulation and gene discovery." 4/1/00-3/31/02, $200,000.

Department of Energy, Office of Energy Research, "Ferulate-5-hydroxylase: requirements for expression and activity". 3/15/97-3/14/00, $580,000.

American Chemical Society, Frasch Foundation, "Modification of lignin monomer composition by overexpression of ferulate-5-hydroxylase." 7/1/97-6/30/02, $125,000.

Department of Energy, Office of Energy Research, "Modification of lignin monomer composition by overexpression of ferulate-5-hydroxylase." 3/15/96-3/14/97, $35,000 (supplemental grant).

Department of Energy, Office of Energy Research, "Modification of lignin monomer composition by overexpression of ferulate-5-hydroxylase." 3/15/94-3/14/97, $444,545.

Past extramural grants awarded to Dr. Chapple as co-investigator

Department of Energy, Office of Energy Research, "Center for Catalytic Conversion of Biomass to Bioenergy" 08/01/2009-07/31/2014, $15,074,138

Showalter Trust, "Analytical Instrumentation for Studying Lignin Biosynthesis" 7/1/00-6/30/01, $97,000 (Drs. Wilfred Vermerris, John D. Axtell, Keith D. Johnson, and Michael R. Ladisch, co-investigators).

United States Department of Agriculture, National Needs Fellowships in Plant Biotechnology. "Plant Fiber Biotechnology", 1/1/96-12/31/98, $108,000 (Drs. J. Bemiller, N. Carpita, C. Chapple, and T. Hodges, co-investigators).

Past intramural grants awarded as principal investigator

Purdue University Energy Center, (Chapple, C., PI; Meilan, R., Ladisch, M., co-PIs), "Engineering of Poplar for Bio-ethanol Production: An Integrated Approach", 06/01/06-05/31/07, $50,000
Purdue Agricultural Research Programs, "Modification of lignin monomer composition by

overexpression of ferulate-5-hydroxylase." 7/1/97-6/30/99, $24,000.

Purdue Research Foundation, "Modification of lignin composition in plants by manipulation of ferulate-5-hydroxylase activity." 1/95-12/96, $20,400.

Purdue Agricultural Research Station, "Characterization of secondary metabolism mutants of Arabidopsis". 7/95-6/96, $24,000.

Purdue Research Foundation, "Characterization of ferulate 5-hydroxylase as a paradigm for plant cytochrome P450 monooxygenases." 7/1/97-6/30/99, $20,400.

Purdue Research Foundation, "Genomic analysis of the serine carboxypeptidase-like protein family of Arabidopsis." $26,280.

SERVICE (since 2005)

ADVANCE Diversity Catalyst, 2009-2012
Managing Editor, Plant Physiology, 2007-2009
Editorial Board, Annual Review of Plant Biology, 2006-2011
DOE Feedstock Genomics Panel member, 2007
Purdue University College of Agriculture Strategic Plan Review Committee, 2007
EpoBio Advisory Board (http://www.epobio.net/)
"Designing Oilseeds for Tomorrow's Market" Genome Canada Grant Scientific Advisory Board Member, 2006-2009
President, Phytochemical Society of North America, 2005-2006
Aracyc Annotation Jamboree, February 2006
DOE Biomass to Biofuels Workshop, December 2005
NSF Plant Cyberinfrastructure Workshop, November 2005

Journal articles reviewed *ad hoc* for:

Archives of Biochemistry and Biophysics, Canadian Journal of Botany, Current Biology, Genetics, Journal of Biological Chemistry, Nature, Nature Biotechnology, Phytochemistry, Plant Cell, Plant Molecular Biology, Plant Physiology, Planta, Proceedings of the National Academy of Sciences, Science, The Plant Journal (former editorial board member)

Grant proposals reviewed for:

United States - Israel Binational Agricultural Research and Development Fund (BARD)
National Science Foundation
Samuel Roberts Noble Foundation
United States Department of Agriculture
United States Department of Energy

Graduate Students

Dolly Bell LeLong	PUPP, Ph.D. 1998
Gail Weaver	BCHM, M.S. 1997
John Humphreys	BMB, Ph.D. 2003
Amber Shirley	PBP, Ph.D. 2004
Matt Hemm	PBP, Ph.D. 2004
Michael Thompson	BCHM, M.S. 2004
Taksina Sinlapadech	PBP, Ph.D. 2006
Chris Fraser	PGP, Ph.D. 2006
Yu Han	PBP, M.S. 2007
Jake Stout	PBP, Ph.D. 2007

Jing-Ke Weng	PBP. Ph.D. 2009
Nick Anderson	BCHM. Ph.D. 2014
Wenjie Zeng	BCHM, M.S. 2014
Yi Li	BCHM, Ph.D. 2015
Whitney (Soltau) Dolan	BCHM, Ph.D.
Peng Wang	PULSe, Ph.D.
Fabiola Muro	PULSe, Ph.D.
Xiangying (Candy) Mao	BCHM, Ph.D.

Post-doctoral fellows

Knut Meyer (DuPont)
Max Ruegger (Dow Agrosciences)
Rochus Franke (University of Bonn)
Ramesh Nair (Chromatin Inc.)
Jeff Denault (Eli Lilly)
Thomas Sors (Purdue University)
Shiva Hemmati (Shiraz University)
Shinyoung Lee (Purdue University)
Xu Li (NC State University)
Nick Bonawitz (Dow Agrosciences)
Jeong Im Kim (current)
Josyula Kalyani (current)
Kyle Mohler (current)

TEACHING

Courses Taught and Evaluations since 2002

Sem.	Course	Title	Class Size	Credits	Course Eval.	Instruct. Eval.
F2015	BCHM 100	Intro. to Biochemistry	72	2		
F2014	BCHM 100	Intro. to Biochemistry	72	2		
F2013	BCHM 100	Intro. to Biochemistry	40	2		
F2012	BCHM 100	Intro. to Biochemistry	36	2		
F2011	BCHM 100	Intro. to Biochemistry	39	2		
F2010	BCHM 100	Intro. to Biochemistry	39	2		
F2009	BCHM 100	Intro. to Biochemistry	39	2		
F2008	BCHM 100	Intro. to Biochemistry	39	2	4.0	4.6
F2007	BCHM 100	Intro. to Biochemistry	39	2	4.3	4.8
F2006	BCHM 307	Biochemistry	150	3	4.1	4.8
F2005	BCHM 307	Biochemistry	78	3	4.0	4.4
S2005	BCHM 690	Biochem. Seminar	12	1	4.0	4.0
F2004	BCHM 307	Biochemistry	136	1	3.5	4.3
S2004	BCHM 307	Biochemistry	136	3	3.9	4.5
S2003	BCHM 307	Biochemistry	134	3	4.0	4.7
S2002	BCHM 307	Biochemistry	129	3	3.8	4.6

Statement of Teaching Philosophy

During the past ten years, my interactions with over a thousand BCHM 307 students have strongly shaped my teaching philosophy. After all, a teaching philosophy is not something that a professor imposes on his or her students; it is something that develops as a teacher learns about their students' aspirations, expectations, abilities, and level of preparation. In my opinion, a teaching philosophy evolves and is contextual. Thus, my approach to teaching has been both influenced and refined over the past ten

years, and is distinctly different from how I have handled graduate courses in the past. Since BCHM 307 has been my most extensive teaching commitment, I will focus this philosophy statement on my approach to this course.

I was an undergraduate who changed majors three times before deciding to get a degree in botany. My interest in biochemistry came very late in my undergraduate career. I believe this experience helps me to understand many of my BCHM 307 and BCHM 100 students. Like I was when I took biochemistry for the first time, they are non-majors, ninety-nine percent of whom take my course only because it is required. This perspective has led me to one important component of my teaching philosophy: a pledge not to have too short of a memory. I try to remember that mine is not the only course my students are taking, that biochemistry is hard to learn, and that focusing on what and why I couldn't understand the subject when I was in their seats might help me do a better job. Bearing this in mind leads to me to try to make sure I stress how simple things are, not how complex. The chemistry of living organisms is complex to be sure, but the lessons and concepts that will stick with my students the longest are the ones that I can boil down to their essence. When I can say to them "That's really all there is to it…" I know that the best students will be able to augment that simplicity with some of the other details I have tried to convey, and I know that the rest will go away with at least some grasp of a complex subject. For students at every level, the key to their learning is the demystification of the subject.

I now realize that many of my students have come to believe that they cannot possibly understand chemistry, and by extension, biochemistry. Perhaps this is not surprising since we frequently ask them to understand dynamic processes represented by static diagrams in their texts, occurring in time intervals they are not used to thinking about, at scales too small to see. For these reasons, I believe that teaching methods that stress visualization are essential to the learning of biochemistry. I try to bring that visualization into the classroom. In some cases, this involves viewing crystal structures of protein molecules so that my students can develop the ability to picture biochemical events at the molecular level. In other cases, my students will come away with a better understanding if I bring the atomic level up to a scale with which they are more familiar. If that means comparing a gel filtration bead to a colander of spaghetti that's been left too long the sink, then that's how I'll describe it, even if it's not particularly elegant.

A third component of my teaching philosophy is to develop a rapport with my students. I believe it is critical that students feel that everyone in the lecture room is on the same side and in particular, that I'm interested in the success of each and every student. I tell my students during the first lecture that I do not grade on a curve. This may be frightening to some, but I also tell them that if everyone in the class deserves an A, they will all get one. I also try to bring the professor / student classroom relationship to a more even level by not taking myself too seriously. As mentioned above, I use a lot of demonstrations in class to try to convey concepts in biochemistry that are difficult to visualize, especially ones that are critically important to the subject. By using students as biochemical molecules, many of these demonstrations end up being fairly silly, but as I tell my students, if silly helps them learn and remember, then I'm only too happy to be silly. In fact, I always remember to tell my students what a past student wrote on a class evaluation years ago, "I love Dr. Chapple's demonstrations in class. They help to break up the monotony of lecture." I guess there are worse comments one could receive!

<u>Undergraduates from Dr. Chapple's Laboratory Who have Pursued Post-graduate or Professional Training</u>

Anna Hurlock, Ph.D. student, Michigan State University; Ethan Romero-Severson, Ph.D. student, University of Michigan; Lance Rider, Ph.D. student, University of Michigan; Dr. Kristen Bastress, Ph.D. Duke University, 2006; Jonathan Van Dyke, Ph.D. student, University of Wisconsin - Milwaukee; Colleen McMichael, Ph.D. student, University of Wisconsin; Dr. Tony Schilmiller, Ph.D., Michigan State University 2005; Dr. Nathan Zenzer, Ph.D., University of California Davis, 2003; Bette Weston, M.D., IU Medical School

<u>Publications Co-authored by Undergraduates (designated in bold font)</u>

Bonawitz ND, Soltau WL, **Blatchley MR**, Powers BL, **Hurlock AK**, **Seals LA**, Weng J-K, Stout J, Chapple C. (2012) REF4 and RFR1, subunits of the transcriptional coregulatory complex Mediator, are required for phenylpropanoid homeostasis in Arabidopsis. J. Biol. Chem. **287**:

5434-5445.
Schilmiller T, Stout J, Weng J-K, Humphreys J, Ruegger MO, Chapple C (2009) Mutations in the *CINNAMATE 4-HYDROXYLASE* gene lead to substantial changes in metabolism, growth and development in Arabidopsis. Plant J. 60: 771-782
Stout J, **Romero-Severson E**, Ruegger MO, Chapple C (2008) Semi-dominant mutations in *Reduced Epidermal Fluorescence 4* reduce phenylpropanoid content in Arabidopsis. Genetics 178: 2237-2251
Sinlapadech T, Stout J, Ruegger MO, **Deak M,** Chapple C (2007) The hyperfluorescent trichome phenotype of the *brt1* mutant of Arabidopsis is the result of a defect in a gene encoding a sinapic acid: UDPG glucosyltransferase. Plant J. **49**: 655-668
Fraser CM, **Rider LW**, Chapple C (2005) An expression and bioinformatics analysis of the Arabidopsis serine carboxypeptidase-like gene family. Plant Physiol **138**: 1136-1148
Nair RB, **Bastress KL**, Ruegger MO, Denault JW, Chapple C (2004) The Arabidopsis *REF1* gene encodes an aldehyde dehydrogenase involved in ferulic acid and sinapic acid biosynthesis. Plant Cell **16**: 544-554
Shirley AM, **McMichael CM**, Chapple C (2001) The *sng2* mutant of Arabidopsis is defective in the gene encoding the serine carboxypeptidase-like protein sinapoylglucose:choline sinapoyltransferase. Plant J **28**: 83-94
Franke R, **McMichael CM,** Shirley AM, Meyer K, Cusumano JC, Chapple C (2000) Modified lignin in tobacco and poplar plants overexpressing the Arabidopsis gene encoding ferulate 5-hydroxylase. Plant J **22**: 223-234

Visiting Student Researchers

Vanja Cancovic, IAESTE intern, summer 2007; Bernhard Stump, IAESTE intern, summer 2002; Nitima Suttipanta, Ubon Ratchathani University, Thailand, summer 2002; Xay Marie Muñoz, MARC/AIM Program, summer 2000; Gill Fozzard, summer, 2000.