

Paul D. Brown, PhD.

Curriculum Vitae

Professor of Chemistry, Biology, & Environmental Studies
phone: (604) 888-7511 or (604) 513-2121 ext. 3362 (work)
email: paul.brown@twu.ca or paulb3123@gmail.com

Background

Trinity Western University. 2001-present. Tenure, 2005, Professor, 2011.
University of Idaho. 2000. Visiting Assistant Professor, Plant, Soil and Entomological Sciences.
Max Planck Institute for Chemical Ecology. 1997–1999. Scientific Co-worker, Plant Biochemistry and Molecular Biology Group. (Jonathan Gershenzon, Director)
University of Idaho. 1991–1996. Research Associate, Plant, Soil and Entomological Sciences. (Matthew J. Morra laboratory group)
PhD. Soil Science (soil organic and plant biological chemistry), University of Idaho, 1995 (Dec.) (with Matthew J. Morra)
M.Sc. Soil Science (chemistry), University of Idaho, 1991 (with Matthew J. Morra)
Seven years professional horticultural experience, 2 years of high school teaching.
B.Sc. Biology (*Cum Laude*), Southern Nazarene University, 1978.

Teaching - Courses commonly taught or in current teaching rotation

Chem 370 (*Environmental Chemistry*)
Chem/Biol 384 (*Biochemistry I*)
Biol 315 (*Plant Physiology*)
Geog 321 (*Soil Science*)
ENVS 409 (*Undergraduate Thesis* – proposal/development)
NATS 487 & 490 (Lecture, Seminar, and Discussion on *Science and Christianity*)

Other courses taught at university:

Chem 358, *Analytical Chemistry* (instrumental) (TWU)
Chem 112, *General Chemistry II* (TWU)
Chem 221, *Organic Chemistry I* (TWU)
Chem 222, *Organic Chemistry II* (TWU, current)
Pesticides in the Environment (University of Idaho, team taught)
Soil Biology (University of Idaho, team taught)
Ecology Lab (TWU)

Research Interests

I have interests in chemical ecology (the role chemistry plays in ecological interactions), plant biology, plant natural products & biochemistry, rhizosphere (root-zone) chemistry, environmental chemistry, soils & soil chemistry, bogs, and science-theology-philosophy interactions.

Refereed Research Publications

Stotz, H.U., Y. Sawada, Y. Shimada, M.Y. Harai, E. Sasaki, M. Krischke, P.D. Brown, K. Saito, and Y. Kamiya. 2011. Role of camalexin, indole glucosinolates, and side chain modification of

glucosinolate-derived isothiocyanates in defense of *Arabidopsis* against *Sclerotinia sclerotiorum*. *Plant Journal*, 67:81-93

- Brown, P.D. and M.J. Morra. 2009. Inhibition of nitrification in soil by Brassicaceae tissues. *J. Agric. Food Chem.*, 57:7706-7711.
- Bainard, L., P.D. Brown, and M. Upadhyaya. 2009. Inhibitory effect of tall hedge mustard (*Sisymbrium loeselii*) allelochemicals on rangeland plants and arbuscular mycorrhizal fungi. *Weed Science*, 57:386-393.
- Haugen, R., L. Steffes, J. Wolf, P. Brown, S. Matzner, and D.H. Siemens. 2008. Evolution of drought tolerance and defense: dependence of tradeoffs on mechanism, environment and defense switching. *Oikos*, 117:231-244.
- Boege, K., R. Dirzo, D. Siemens, and P. Brown. 2007. Ontogenetic switches from plant resistance to tolerance: Minimizing costs with age? *Ecology Letters*, 10:177-187.
- Jones, T., S. Kulseth, M. Zehfus, P. Brown, and D. H. Siemens. 2006. Simultaneous evolution of competitiveness and defense: induced switching in *Arabidopsis drummondii*. *Plant Ecology*, 184 (2): 245-257.
- Brown, P.D., J.G. Tokuhisa, M. Reichelt, and J. Gershenzon. 2003. Variation of glucosinolate accumulation among different organs and developmental stages of *Arabidopsis thaliana*. *Phytochemistry*, 62:471-481.
- Reichelt, M., P.D. Brown, B. Schneider, N.J. Oldham, E. Stauber, J. Tokuhisa, D.J. Kleibenstein, T. Mitchell-Olds, J. Gershenzon. 2002. Benzoic acid glucosinolate esters and other glucosinolates from *Arabidopsis thaliana*. *Phytochemistry*, 59:663-671.
- Graser G., N.J. Oldham, P.D. Brown, U. Temp, and J. Gershenzon. 2001. The Biosynthesis of Benzoic Acid Glucosinolate Esters in *Arabidopsis thaliana*. *Phytochemistry*, 57:23-32.
- Kliebenstein, D. J., J. Kroymann, P. Brown, A. Figuth, D. Pedersen, J. Gershenzon, and T. Mitchell-Olds. 2001. Genetic control of natural variation in *Arabidopsis* glucosinolate accumulation. *Plant Physiology*, 126: 811-825.
- Gardiner, J.B., M.J. Morra, C.V. Eberlein, P.D. Brown, and V. Borek. 1999. Allelochemicals released in soil following incorporation of rapeseed (*Brassica napus*) green manures. *J. Agric. Food Chem.* 47:3837-3842.
- Eberlein C.V., M.J. Morra, M.J. Guttieri, P.D. Brown, and J. Brown. 1999. Glucosinolate production in five field grown *Brassica napus* cultivars used as green manures. *Weed Technol.* 12:712-718.
- Morra, M.J., S.E. Fendorf, and P.D. Brown. 1997. Sulfur oxidation states in humic and fulvic acids determined using X-ray absorption near-edge spectroscopy. *Geochim. Cosmochim. Acta.* 61:683-688.
- Smolinska, U., M.J. Morra, G.R. Knudsen, and P.D. Brown. 1997. Toxic effect of glucosinolate degradation products from *Brassica napus* seed meal towards *Aphanomyces euteiches* f. sp. pisi. *Phytopathology* 87:77-82.
- Lewis, T.A., M.J. Morra, and P.D. Brown. 1996. Comparative product analysis of carbon tetrachloride dehalogenation catalyzed by cobalt corrins in the presence of thiol or titanium(III) reducing agents. *Environ. Sci. Tech.* 30:292-300.
- Brown, P.D. and M.J. Morra. 1996. Hydrolysis products of glucosinolates in *Brassica napus* tissues as inhibitors of seed germination. *Plant and Soil* 181:307-316.
- McCaffrey, J.P., L. Williams III, V. Borek, P.D. Brown, and M.J. Morra. 1995. Toxicity of ionic thiocyanate-amended soil to the wireworm, *Limonius californicus* (Coleoptera: Elateridae). *J. Econ. Entomol.* 88:793-797.

- Lewis, T.A., M.J. Morra, J. Habdas, L. Czuchajowski, and P.D. Brown. 1995. Reductive dechlorination of carbon tetrachloride mediated by cationic water-soluble metalloporphyrins. *J. Environ. Qual.* 24:56-61.
- Brown, P.D. and M.J. Morra. 1995. Glucosinolate-containing plant tissues as bioherbicides. *J. Agric. Food Chem.* 43:3070-3074.
- Borek, V., M.J. Morra, P.D. Brown, and J.P. McCaffrey. 1995. Transformation of the glucosinolate-derived allelochemicals allyl isothiocyanate and allyl nitrile in soil. *J. Agric. Food Chem.* 43:1935-1940.
- Brown, P.D., M.J. Morra, and V. Borek. 1994. Gas chromatography of allelochemicals produced during glucosinolate degradation in soil. *J. Agric. Food Chem.* 42:2039-2034.
- Borek, V., M.J. Morra, P.D. Brown, and J.P. McCaffrey. 1994. Allelochemicals produced during sinigrin decomposition in soil. *J. Agric. Food Chem.* 42:1030-1034.
- Williams, L., III., M.J. Morra, P.D. Brown, and J.P. McCaffrey. 1993. Toxicity of allyl isothiocyanate-amended soil to *Limonius californicus* (Mann.) (Coleoptera: Elateridae) wireworms. *J. Chem. Ecol.* 19:1033-1046.
- Brown, P.D. and M.J. Morra. 1993. Fate of ionic thiocyanate (SCN⁻) in soil. *J. Agric. Food Chem.* 41:978-982.
- Brown, P.D., M.J. Morra, J.P. McCaffrey, D.L. Auld, and L. Williams III. 1991. Allelochemicals produced during glucosinolate degradation in soil. *J. Chem. Ecol.* 17:2021-2034.
- Brown, P.D. and M.J. Morra. 1991. Ion chromatographic determination of SCN⁻ in soils. *J. Agric. Food Chem.* 39:1226-1228.

Book Chapters and Entries

- Brown, P.D. Intelligent Design. 2009. In: *The Science and Religion Primer*, H. Campbell and H. Looy, Ed. Baker Academic.
- Brown, P.D. and M.J. Morra. 1999. Glucosinolate-derived allelochemicals in the soil environment. In: *Allelopathy Update, Volume 2, Basic and Applied Aspects*, S.S. Narwal, Ed., Oxford and IBH Publishing, New Delhi, pp. 65-89
- Brown, P.D. and M.J. Morra. 1997. Control of soil-borne plant pests using glucosinolate-containing plants. In: *Advances in Agronomy*, D.L. Sparks, Ed., Academic Press, New York, pp. 167-231.

Technical Report

- Brown, P.D., D. Jordan, G. Jordan, D. Clements, K. VanderGugten, S. Steunenber, T. Buhler, M. Ness, M. Paivinen, D. Budi Ayu. 2011. Langley Bog Research Project Report. Trinity Western University, Environmental Studies. [Report for Metro Vancouver East Parks Region and the Langley Bog Committee, 92 pages.]

Some Professional Posters and Presentations (since 2002)

- Regehr, S.N. and P.D. Brown. 2012. Presence of SCN⁻ in the rhizosphere of glucosinolate-containing plants. Northwest Regional Meetings, ACS and AAAS, Boise, Idaho, June 24-27.
- Brown, P.D. 2010.* "A Glucosinolate Sampler: Questions from Ecology, Evolutionary Change, and Applications in Agriculture" Department of Chemistry and Biochemistry, Laurentian University, July 23.

- Ness, M., D. Jordan, P. Brown, and J. Hughes. 2009. Humification and macrofossil analysis of the Langley Bog peat; a palaeoclimatic record. [poster] Annual Meeting, Western Division of Canadian Association of Geographers, Nanaimo, British Columbia. March 6-7.
- Clements, D.R., A. Zhou, and P.D. Brown. 2008. Invasive plant management from cradle to grave: management of decomposition of the annual *Impatiens glandulifera*. 5th International Weed Science Congress, Vancouver, BC. [poster]
- Brown, P.D. 2006. Evolution in ID perspective: The aspect of evolution through loss. RAPID 2 Conference, Biola University, La Mirada, CA, May 11-13.
- Brown, P.D. 2006.* 1) Faculty luncheon lecture: The Nature of Nature – Thoughts on Design, Law, Chemistry, & Codes; 2) Pascal Lecture: Information, Evolution, and Intelligent Design. Westmont College, Santa Barbara, CA, March 3.
- Brown, P.D.* 2005. Glucosinolates: Chemistry and Biological Effects of Plant Natural Products from the Mustard Family. Chemistry Departmental Seminar, Simon Fraser University, September 14.
- Brown, P.D. 2002. Model plant systems as a test of Darwinistic and ID Predictions. RAPID Conference, Biola University, La Mirada, CA, October 25-27.

Presentations were given at Wycliffe Hall, Oxford, between 2003-2005 as part of the John Templeton Oxford Seminar (JTOS) program on Science and Christianity at which I was a 3-summer participating Fellow, and I was an invited attendee at the second Science and Transcendence Advanced Research Series (STARS) conference, January 11-15, 2007, [Evolution, ET, and the Significance of Life in the Universe](#) (a conference sponsored by the Center for Theology and Natural Science and the Templeton Foundation).

*Invited presentations.

Other articles concerning faith and science:

I have published 14 articles concerning interactions of science and Christianity written on a more popular level in church-related publications, *Credenda Agenda* and *U-Turn*. These articles were published between 1993-1995 (*Credenda*) and in 2003 (*U-Turn*).

Recognition:

Outstanding Employee Award, University of Idaho (1996)
John Templeton Oxford Seminar Series on Science and Christianity – Fellowship Award (2003-2005).

Graduate:

Gamma Sigma Delta (Agriculture Honor Society)
Siddoway Scholarship Recipient (2 yr for graduate studies, 1988-1990)
University Research Office Supplementary Funds Award for Doctoral Research (1990-91)
Gamma Sigma Delta Graduate Student Research Award (1994)
U of I Graduate Student Research Exhibition Award (1995)
Second place, Graduate Student Presentation, WSSS / AAAS Pacific Division (Vancouver, BC, 1995)

Undergraduate:

Alpha Nu (SNU)
Presidential Honor Award (SNU)

Memberships:

American Chemical Society (ACS), Agriculture and Food Chemistry section