

*Curriculum Vitae*  
**LETITIA M. McCUNE, MS, PhD**  
**Principal Consultant**  
**BotanyDoc, LLC**  
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## Summary

Experienced researcher, author, presenter and educator with extensive laboratory knowledge and a multidisciplinary background in plant science, nutrition and ethnobotany.

Work experience in the laboratories of the University of Arizona, McGill University, the Centre for Indigenous Peoples' Nutrition and the Environment (CINE), Harvard Medical School, Massachusetts General Hospital, Cornell University, the Boyce Thompson Institute for Plant Research, and the University of British Columbia, as well as projects in a biotechnology corporation, a non-profit seed conservation organization and several select Native American/First Nations organizations.

## Research Interests

Traditional uses of food and medicinal plant species by Indigenous Peoples; antidiabetic, anticancer and antioxidant properties of plants; intellectual property and seed rights of Indigenous Peoples.

## University Education

|  |           |
|--|-----------|
| <i>Post Doctoral Faculty, Nutritional Sciences</i><br>University of Arizona, Tucson, Arizona   | 2005-2008 |
| <i>Ph.D., Plant Science</i><br>"Antioxidants in Canadian Boreal Forest Indigenous Medicinal Plant Treatments<br>in Relation to Non-Insulin-Dependent Diabetes Mellitus"<br>McGill University, Montreal, Quebec | 2000      |
| <i>M.Sc., Plant Science</i><br>"Characterization of Galactolipid Synthesis in Pea Root Plastids"<br>McGill University, Montreal, Quebec  | 1995      |
| <i>B.Sc., Plant Science</i><br>Cornell University, Ithaca, NY  | 1984      |
| <i>Certificate, Dietary Supplement Intensive Practicum</i> (NIH, 2007)<br><i>Certificate, Small Business Management</i> (Northeastern University, 1988)  |           |

## Presentations

**Letitia M. McCune** and Twila R. Cassadore. 2019. Methods for the Reintroduction of Traditional Foods. *The 42<sup>nd</sup> Society of Ethnobiology Annual Meeting*. Vancouver, B.C. Oral paper presentation.

**Letitia M. McCune**. 2018. *Food Insecurity and the Desert Southwest*. Global Nutrition Problems: Health, Science, and Ethics 450. Pennsylvania State University. Invited oral presentation.

Twila Cassadore, Seth Pilsk and **Letitia M. McCune**. 2018. Lessons from the Traditional Western Apache Diet Program. *Third Annual Conference on Native American Nutrition*. Shakopee Mdewakanton Sioux Community, Prior Lake, Minnesota. Breakout session and poster co-presenter.

**Letitia M. McCune**. 2018. The Methods and Manners of Food Sovereignty. *Joint Conference of the Society of Ethnobiology & Society for Economic Botany*. UW-Madison, Madison, Wisconsin. Oral paper presenter and session chair.

Harriet V. Kuhnlein (with co-presenters Valerie Nuvayestewa and **Letitia M. McCune**). 2017. Why and How to

Document the Traditional Food System in Your Community. *Second Annual Conference on Native American Nutrition*. Shakopee Mdewakanton Sioux Community, Prior Lake, Minnesota. Breakout workshop co-presenter.

**Letitia M. McCune** and Alain Cuerrier. 2017. Traditional Medicines from Culture Specific Gathering Sites Improve Indigenous Peoples' Health. *Indigenous Peoples' Land Rights and the Roles of Ethnoecology and Ethnobotany Symposium*. University of Victoria, Victoria, B.C. Invited speaker.

**Letitia M. McCune**. 2017. Academic Societies, Ethnobiology and Ethics Codes. *40<sup>th</sup> Annual Conference of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 2017. *IPR and Traditional Plant Resources*. Tohono O'odham Ethnobotany. Tohono O'odham Community College. Invited oral presentation for Earth Week.

**Letitia M. McCune**. 2016. Traditional Seed Resources: Sovereignty and Ethics. *2016 FRTEP (Federally Recognized Tribal Extension Program) Professional Development Meeting*. Invited oral paper presentation.

**Letitia M. McCune**. 2016. Protecting Seed Sovereignty: What is the Role of the Ethnobotanist? *39<sup>th</sup> Annual Meeting of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 2016. Methods of IPR Protection: Examples of Agreements and Permitting Requirements. *57<sup>th</sup> Annual Meeting of the Society for Economic Botany*. Oral paper presentation.

**Letitia M. McCune**. 2015. Seed Sovereignty, Conservation and Patenting: The Protection of Intellectual Property Rights. *38<sup>th</sup> Annual Conference of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 2013. SEB Code of Ethics Workshop. *54<sup>th</sup> Annual Meeting of the Society for Economic Botany*. Ethics Chair, workshop panel organizer and moderator.

**Letitia M. McCune**. 2013. Proposed SEB Code of Ethics and Introduction to ISE's. *54<sup>th</sup> Annual Meeting of the Society for Economic Botany*. Oral paper presentation.

**Letitia M. McCune**. 2012. Seed Conservation Policies to Increase Agricultural Biodiversity, IPR and Benefits Sharing. Oral paper presentation to Native Seeds/SEARCH staff and board members with suggestions for follow up.

**Letitia M. McCune**. 2012. Seed Conservation Policies to Increase Agricultural Biodiversity, IPR and Benefits Sharing. *53<sup>rd</sup> Annual Meeting of the Society for Economic Botany*. Oral paper presentation.

**Letitia M. McCune**. 2011. Diabetes, Antioxidants and the Use of Indigenous Plant Species. *Annual Retreat of the Tucson Herbalist Collective*. Oral paper presentation.

**Letitia M. McCune**. 2010. Agricultural Biodiversity, IPR and Benefits Sharing: The Native Seeds/SEARCH Example. *33<sup>rd</sup> Annual Meeting of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 2009. Phytoestrogens: the latest research on these dietary sources of estrogen. Oral paper presentation to breast cancer survivors. University Medical Center, Tucson, AZ.

Stendell-Hollis NR, Cussler EC, Green TK, Nardi EB, **McCune LM**, Thomson CA. 2007. A green tea intervention in pre- and postmenopausal women post-chemotherapy demonstrated small favorable, but not significant, changes in body weight and composition compared to placebo tea. *American Institute for Cancer Research Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective - The Launch Conference*. Poster presentation.

Stendell-Hollis NR, Thomson CA, **McCune LM**, West JL, Cussler EC, Kroggel M, Kubota C. 2007. Lycopene-enhanced tomatoes significantly elevated serum lycopene levels as compared to consumption of conventional tomatoes in a randomized, crossover, controlled feeding study in a healthy population. *Research Frontiers in Nutritional Sciences Conference 2007*, University of Arizona. Poster presentation.

**Letitia M. McCune**. 2007. Desert habitat's potential for beneficial compounds. *American Society for Horticultural Science Annual Conference 2007*. Invited workshop oral presentation.

**Letitia M. McCune**. 2007. *Rhus* species and chronic disease. *Society for Economic Botany 48<sup>th</sup> Annual Meeting*. Oral paper presentation.

**Letitia M. McCune**. 2007. The Sugar and Spice Study. Oral presentation to funding agency, Standard Process, Inc. with facility visit.

**Letitia M. McCune**, Renu Roy, Xiang Zheng, Tina K. Green, Phyllis M. Reid and Cynthia A. Thomson. 2007. Short term effects of green tea on resting energy expenditure, oxidant stress and inflammation in overweight/obese, post-menopausal women. *Experimental Biology Annual Meeting 2007*. Poster presentation.

**Letitia M. McCune**. 2007. Desert Fruits of the Southwest. *Society of Ethnobiology 30<sup>th</sup> Annual Conference*. Oral paper presentation.

**Letitia M. McCune**, Suzanne Nelson and Kevin Dahl. 2007. Native Seeds/SEARCH Gap Analysis of 20 year collection: Arizona. *Arizona Botanists Conference*. Poster presentation.

**Letitia M. McCune**. 2006. Diabetes: Monsters and Sugar. *Advanced Nutritional Sciences, Nutritional Sciences 520*. University of Arizona. Lecture presentation.

**LM McCune**, KF Kleppinger-Sparace and SA Sparace. Monogalactosyldiacylglyceride Synthesis in Pea Root Plastids. Oral paper presentation on my Masters research by KF Kleppinger-Sparace for the *17<sup>th</sup> International Plant Lipid Symposium*.

Roy R, Zheng X, Green T, **McCune LM**, Reid PM and Thomson CA. 2006. Effects of Green Tea on Resting Energy Expenditure, Oxidative Stress and Inflammation among Overweight Postmenopausal Women. Poster for Graduate Studies in Life Sciences Poster Session at UA.

Mitrus GM, West J, Kubota C, **McCune LM**, Thomson CA. 2006. High Lycopene Tomato Consumption: Effects of Consumption on Human Plasma Lycopene Levels and Oxidative Status. Poster for Graduate Studies in Life Sciences Poster Session at UA.

**Letitia M. McCune**. 2006. Diabetes, Antioxidants and the Use of Indigenous Plant Species. Lecture presentation in the UA Nutritional Sciences Department Seminar Series.

**Letitia M. McCune**. 2005. Native Seeds/SEARCH Gap Analysis. *46<sup>th</sup> Annual Meeting of the Society for Economic Botany*. Oral paper presentation.

**Letitia M. McCune**. 2005. Native Seeds/SEARCH Gap Analysis 2005. Final oral report to staff, board members and funder.

**Letitia M. McCune**. 2004. Medicinal Plants. Ethnobotany, Anthropology 469/569. University of Arizona.

Gary Nabhan, Patty West. 2004 (and **Letitia M. McCune** informally). Community Supported Wild Foraging Training. *27<sup>th</sup> Annual Meeting of the Society of Ethnobiology*. Co-presenter, described PhD research and promoted mesquite.

**Letitia M. McCune**. 2004. Conserving Habitats to Protect Antioxidant Plant Species. *27<sup>th</sup> Annual Meeting of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 2003. The Importance of Growth Habit and Habitat on the Antioxidant Activity of Medicinal Plant Species. *44<sup>th</sup> Annual Meeting of the Society for Economic Botany*. Oral paper presentation.

**Letitia M. McCune**. 2003. The Importance of Plant Part Selection on the Antioxidant Activity of Traditional Plant Remedies. *Society of Ethnobiology 26<sup>th</sup> Annual Conference*. Oral paper presentation.

**Letitia M. McCune** and Timothy Johns. 2000. Potential Antidiabetic Plants of Canada: Selection and Use in Relation to Antioxidant Activity. *23<sup>rd</sup> Annual Conference of the Society of Ethnobiology*. Oral paper presentation.

**Letitia M. McCune**. 1999. Phytochemicals and Diabetes. Herbs, Foods and Phytochemicals, Course 382-512, School of Dietetics and Human Nutrition. McGill University.

**Letitia M. McCune** and Timothy Johns. 1998. Diabetes, Antioxidants and the Indigenous Medicinal Plant Treatments of Canada. *39<sup>th</sup> Annual Meeting of the American Society of Pharmacognosy*. Poster presentation (P-181).

**Letitia M. McCune**. 1998. Phytochemicals and Diabetes. Herbs, Foods and Phytochemicals, Course 382-512, School of Dietetics and Human Nutrition. McGill University.

**Letitia M. McCune Haakonsen**, Kathryn F. Kleppinger-Sparace and Salvatore A. Sparace. 1994. Galactolipid Synthesis in Pea Root Plastids. *1994 Annual Meeting of the American Society of Plant Physiologists*. Supplement to *Plant Physiology* 105(1):65. Poster presentation.

## Publications

### Peer-Reviewed Publications:

**Letitia M. McCune** and Alain Cuerrier. 2020. Chapter 9: Traditional Plant Medicines and the Protection of Traditional Harvesting Sites. In: *Plants, People, and Places: The Roles of Ethnobotany and Ethnoecology in Indigenous Peoples' Land Rights in Canada and Beyond*. Nancy J. Turner (Ed.). McGill-Queen's University Press, Montreal, Canada. pp. 151-168.

**Letitia M. McCune**, Valerie Nuvayestewa and Harriet V. Kuhnlein. 2019. Why and How to Document the Traditional Food System in your Community: A Report from Breakout Discussions at the 2017 Native American Nutrition Conference. *Current Developments in Nutrition*. 3(S2):19-24. <https://doi.org/10.1093/cdn/nzy089>.

**Letitia M. McCune**. 2017. The Protection of Indigenous Peoples' Seed Rights during Ethnobotanical Research. *Ethnobotanical Letters (Special Issue: Ethics in Ethnobiology)*. 9(1):67-75. DOI: <http://dx.doi.org/10.14237/ebl.9.1.2018.1076>

**Letitia M. McCune**. 2013. Chapter 15: A review of the antioxidant actions of three herbal medicines (*Crataegus monogyna*, *Ginkgo biloba*, and *Aesculus hippocastanum*) on the treatment of cardiovascular diseases. In: *Bioactive Food as Dietary Interventions for Cardiovascular Disease*. R.R. Watson and V.R. Preedy (Eds.), Academic Press, San Diego, CA. pp. 243-253.

**Letitia M. McCune**. 2013. Chapter 22: Traditional medicinal plants of Indigenous Peoples of Canada and their antioxidant activity in relation to treatment of diabetes. In: *Bioactive Food as Dietary Interventions for Diabetes*, R.R. Watson and V.R. Preedy (Eds.). Academic Press, San Diego, CA. pp. 221-234.

**Letitia M. McCune**. 2013. Chapter 13: Dried Cherries: Phytochemicals and health perspectives. In: *Dried Fruits: Phytochemicals and Health Effects*. Cesarettin Alasalvar and Fereidoon Shahidi (Eds.). Wiley-Blackwell, Oxford. pp. 243-257.

**Letitia M. McCune**, Chieri Kubota, Nicole R. Stendell-Hollis, and Cynthia A. Thomson. 2011. Cherries and Health: A Review. *Critical Reviews in Food Science and Nutrition*. 51(1):1-12.

**Letitia M. McCune** and Harriet V. Kuhnlein. 2011. Chapter 15: Assessment of Indigenous peoples' traditional food and nutrition systems. In: *Ethnobiology*. E.N. Andersen, D. Pearsall, E. Hunn and N. Turner (Eds.). Wiley & Sons, Hoboken, N.J. pp.249-266.

Thomson CA, Stendell-Hollis NR, West JL, Cussler EC, **McCune LM**, Kroggel M, Kim HJ, Kubota C. 2008. High-lycopene intake increases serum carotenoid levels but not biomarkers of oxidative stress and inflammation in healthy adults. *Open Bioactive Compounds Journal*. 1:7-12.

**Letitia M. McCune** and Timothy Johns. 2007. Antioxidant activity relates to plant part, life form and growing condition in some diabetes remedies. *Journal of Ethnopharmacology* 112:461-469.

**Letitia M. McCune**, Patrick Owen and Timothy Johns. 2006. Flavonoids, Xanthonenes and Other Antioxidant Polyphenols. In: *Traditional Medicines for Modern Times: Antidiabetic Plants*. Amala Soumyanath (Ed.). CRC Press, Boca Raton, FL. pp. 293-303.

**Letitia M. McCune** and Timothy Johns. 2003. Symptom-specific antioxidant activity of boreal diabetes treatments. *Pharmaceutical Biology*. 41(5): 362-370.

**Letitia M. McCune** and Timothy Johns. 2002. Antioxidant activity in medicinal plants associated with the symptoms of diabetes mellitus used by the Indigenous Peoples of the North American boreal forest. *Journal of Ethnopharmacology*. 82: 197-205.

Lingru Xue, **Letitia M. McCune**, Kathryn F. Kleppinger-Sparace, Michael J. Brown, M. Keith Pomeroy and Salvatore A. Sparace. 1997. Characterization of the glycerolipid composition and biosynthetic capacity of pea root plastids. *Plant Physiology* 113: 549-557.

Gabor Lazar, Ildiko Toth, **Letitia Haakonsen (McCune)** and Howard M. Goodman. 1989. Coregulation of dihydrofolate reductase and thymidylate synthase in overproducer cell lines of wild carrot. *Plant Physiology* 91: 1168-1173.

#### Thesis Documents:

**Letitia M. McCune**. 1999. Antioxidants in Canadian boreal forest indigenous medicinal plant treatments in relation to non-insulin dependent diabetes mellitus. Ph.D. Thesis, McGill University.

**Letitia M. McCune**. 1995. Characterization of galactolipid synthesis in pea root plastids. M.Sc. Thesis, McGill University.

#### Other:

**Letitia M. McCune**. 2005. Native Seeds/SEARCH Gap Analysis. 308 pages plus notes.

**Letitia M. McCune** and Timothy Johns. 1999. Report of invention. Office of Technology Transfer, McGill University.

J. Beynon, **Letitia Haakonsen (McCune)** and F. Cannon. 1989. Nucleotide sequence and deduced amino acid sequence of *Arthobacter* sp.  $\beta$ -1,3-glucanase. Not submitted due to proprietary information.

Ildiko Toth, Gabor Lazar and Howard Goodman. 1987. Purification and immunochemical characterization of a dihydrofolate reductase-thymidylate synthase enzyme complex from wild-carrot cells. *The EMBO Journal* 6: 1853-1858 (Acknowledgement).

#### Grant Writing:

**Letitia M. McCune** (Principal Investigator). Cyndi Thomson, Cheryl Ritenbaugh and Mark Aickin (Co-Investigators). Pilot study of the combination of fenugreek seed and cayenne pepper on the reduction of hemoglobin A1c in adults with metabolic syndrome. Funded by Standard Process, Inc. \$60,000 direct.

Cheryl Ritenbaugh and Anita Dupuis. *Preventing CVD in Native Populations: The Traditional Living Challenge*. Funded by NHLBI. Assisted with proposal, identifying traditional foods, named as consultant.

Cheryl Ritenbaugh and Anita Dupuis. *Salish and Kootenai Environmental Supports for Prevention of Diabetes*. Funded by CDC. Assisted in identifying traditional foods, named as consultant.

Andrew Lewis and Joyce Hamilton. Hopi Special Diabetes Program. Assisted with proposal to include traditional foods.

Evelyn Rens. Native Seeds/SEARCH- numerous proposals. Assisted with grant and funder identification. Attended grant writing workshop.

#### Awards

Standard Process, Inc. Clinical Research Grant, \$60,000 direct, PI (2007)

CSF/WML Travel Fund for NS/S (2005)

FCAR Fellowship (Doctoral research scholarship- Government of Quebec) (1995-98)

Rural Development/Agriculture and Life Sciences Award, Cornell University (1983)

Woman's National Farm and Garden Scholarship, USA (1980)

Greenwich Community Scholarship Award, USA (1980)

**Invited Editorial and Manuscript Reviewer**

Associate Editor, Journal of Ethnobiology  
 Food and Nutrition of Indigenous Peoples  
 Current Developments in Nutrition  
 Current Diabetes Reviews  
 Journal of the American College of Nutrition  
 Acta Pharmacologica Sinica  
 Canadian Journal of Physiology and Pharmacology  
 Ethnobotany Research and Applications  
 Journal of Pharmacognosy and Phytotherapy  
 Pharmaceutical Biology  
 Recent Patents on Endocrine, Metabolic & Immune Drug Discovery  
 American Journal of Kidney Diseases  
 Journal of Ethnobiology  
 Journal of Functional Foods  
 European Journal of Medicinal Plants  
 Plant Foods for Human Nutrition  
 Nutrients  
 Annals of Food Processing and Preservation  
 Scandinavian Journal of Medicine and Science in Sports  
 Food and Bioproducts Processing  
 British Journal of Nutrition

**Selected Memberships**

American Society for Nutrition (ASN)  
 Society for Economic Botany  
     Education Committee (2005-2007)  
     Ethics Committee Chair (2009-2012, 2012-2015, 2015-2018)  
     Nominations and Awards Committee (2010-2011)  
 Society of Ethnobiology  
     Ethics and Advocacy Committee (2017-Present)  
     Associate Editor, Journal of Ethnobiology (2018-Present)  
 International Society of Ethnobiology  
 American Botanical Council  
 Arizona Native Plant Society  
     Education Coordinator Southern Chapter (2005-2007)  
 Native Seeds/SEARCH  
     Board Member (2012-2013)  
 Slow Food USA

**Working and Teaching Experience Detail**

*Medicinal Plant Course Facilitator*

Cornell University

Jan. 2021-Present

Online instructor for Medicinal Plant Certificate program that include 6 courses (Historical Applications of Plant-Based Medicine; Plants for Muscles, Bones and the Reproductive System; Plants for Mental Health and Pain Relief; Plants to Improve Cardiovascular and Respiratory Health; Plants for Promoting Digestive Health and Skin Health; and Boosting Immunity with Medicinal Plants).

*Founder and Principal Consultant*

2011-Present

BotanyDoc, LLC  
 Education and Consulting Services  
[www.botanydoc.com](http://www.botanydoc.com)

Established company to provide consultation services through presentations and written reports of knowledge of academic research and use of plants in the areas of traditional food systems, diabetes, cancer and antioxidants. Intertwined with these topics are the intellectual property rights (IPR) of the Indigenous Peoples that hold the knowledge of these plant uses. Speaking engagements have covered topics of IPR, seed sovereignty, and academic ethics. Projects have included analyzing traditional food systems for nutrients through literature reviews and software analysis as well as documenting the benefits of copper soils to medicinal plant gathering locations.

2 contracts working with the San Carlos Apache Tribe on their Traditional Western Apache Diet Program:

- *Using seasonal traditional food menus compiled all known nutritional values of native plants and animals used,*
- *Created an analysis of menus with professional nutritional software,*
- *Wrote official reports of findings of the high nutritional values of their traditional foods system,*
- *Created a public health journal article draft for their use to publish or not,*
- *Creating a compilation of summary statements on nutrient values,*
- *Creating lists of potential market equivalents for use in designing a contemporary traditional diet*

Wrote a formal report on the benefits of copper soil at a medicinal plant gathering site for the Skeetchestn Natural Resources Corporation illustrating the benefits of the particular site to the medicinal properties of those plants and the overall importance of that land to the health of the Secwepemc People.

Presentations ongoing to academic societies, Tribal Extension Program professionals and colleges on seed sovereignty, IPR, and the importance of traditional plant and food systems (see presentations list).

*Ethics and Advocacy Committee*

2017-Present

*Associate Editor, Journal of Ethnobiology*

2018-Present

Society of Ethnobiology

Invited to be a member of the Ethics and Advocacy Committee in order to develop potential avenues for the Society to address advocacy issues of Indigenous Peoples around the world and to develop protocols related to ethics. Current ethics project is to develop a Code of Conduct for meetings. Invited to be Associate Editor to the Journal to provide external reviews, potential external reviewers and handle the review process of manuscripts in my areas of expertise.

*Ethics Chair*

2009-2018

Society for Economic Botany

Appointed three 3 year terms by society presidents in order to update the society's Code of Ethics and develop a Code of Conduct for meetings. Developed committees of academics to address issues, rewrite codes, place details in the society's newsletters and create workshops and presentations at the annual meetings to address member concerns and provide educational opportunities on ethical methodology. At the 2013 meeting, following workshop and business meeting proposal, the ISE Code of Ethics was adopted. In 2018 the Code of Conduct was adopted. Work was done to implement the principles of these codes and create a toolkit of resources for members.

*Board Member*

2012-2013

Native Seeds/SEARCH  
 Tucson, AZ

Concentrated efforts toward revamping policies and methods related to IPR and Codes of Ethics in this seed conservation organization devoted to preserving seeds of Indigenous Peoples collected over the last 30 years. Presented at board meetings and organized meetings of staff and board on related topics and work efforts around ethical methodology and seed rights.

- Principal Investigator* 2007
- Standard Process, Inc.  
 “Pilot study of the combination of fenugreek seed and cayenne pepper on the reduction of haemoglobin A1c in adults with metabolic syndrome”  
 \$60,000 direct
- Awarded a pilot study grant to manage and direct a clinical study, with co-investigators Cyndi Thomson, Cheryl Ritenbaugh and Michael Aickin, to assess the consumption of traditional recipe doses of chili/cayenne (*Capsaicum annum*) in combination with fenugreek (*Trigonella foenum graecum*) on parameters of diabetes and metabolic syndrome. Future direction may then include studies on traditional Southwest combinations of chili and beans. This grant was returned during leave and may be reinstated.
- Research Associate/Post Doctoral Faculty* 2005-2008
- University of Arizona  
 Nutritional Sciences Department
- Biomarker analysis of clinical trials associated with antioxidants, tea, fruit and vegetable intake in relation to cancer and weight loss including managing the laboratory, training graduate students and assisting in grant writing for Dr. Cyndi Thomson. Assays and analyses included creatinine, isoprostane, prostaglandin E metabolite, C-reactive protein, catecholamines, 8-hydroxy-deoxyguanosine and resting energy metabolism. Worked on developing research projects, and funding strategies for analysis and promotion of traditional foods in regard to cancer and/or diabetes.
- Attended “Current Issues and Recent Developments in Dietary Supplement Research: An intensive practicum”. 2007. Office of Dietary Supplements, National Institute of Health (NIH).
- Consultant* 2006-2007
- Native American Research Partnership  
 “Indigenous Food and Cancer Prevention Planning Grant”
- Named as a consultant to assist Cyndi Thomson and Doreen Martinez in studying the feasibility of promoting traditional food selections to urban indigenous people and communities. Duties were to include help with identification of traditional foods and plant species as well as potential collaborators.
- Guest Lecturer* 2006
- Nutritional Sciences Department, University of Arizona  
 Advanced Nutritional Sciences 520
- Lectured graduate students on diabetes including background, traditional and contemporary treatments, benefits of traditional diets and an overview of current research methods and protocols (including my own).
- Consultant* 2006-2007
- “Salish and Kootenai Environmental Supports for Prevention of Diabetes”.  
 CDC
- Named as consultant to assist Anita Dupuis and Cheryl Ritenbaugh in the identification of traditional foods, recipes and menus for Salish Kootenai in cafeteria settings.
- Consultant* 2006-2007
- “Preventing CVD in Native Populations: The Traditional Living Challenge” (TLC).  
 NHLBI
- Assisted Anita Dupuis and Cheryl Ritenbaugh in the preparation of a grant proposal related to traditional food use, creating tables of potential food sources based on historical use from the literature and current nutrient knowledge. Named as a consultant for the food based aspect of the program to continue identifying appropriate foods and harvesting practices for Salish Kootenai collection trips in the wild.

*Consultant/Research Associate*

October, 2004- May, 2005

Native Seeds/SEARCH  
(funded by Wallace Research Foundation)  
Gap Analysis of Seed Collection

The production of a collections assessment report that assessed gaps in Native Seeds/SEARCH 20 year seed bank collection- gaps related to geography, elevation, species or varieties. Distribution maps were created (Map Point program) to illustrate the collection's sites of acquisition and to illustrate the distribution of individual species and varieties collected in the area. A literature review of plant species used traditionally in Sonora, Chihuahua, New Mexico and Arizona was conducted to identify historical uses in these areas and by individual tribes known to the Southwest. The resulting report will enable Native Seeds/SEARCH to direct future collection acquisitions. 308 pages plus notes.

*Guest Lecturer*

2004

Anthropology Department, University of Arizona  
Course: Ethnobotany (469/569)

Lectured upperclassman and graduate students in general procedures of medicinal plant research, my PhD research results and relation to Southwestern plant species.

*Ph.D. Thesis Research*

1995-2000

*FCAR Fellowship*

1995-1998

Department of Plant Science, McGill University, Montreal, Quebec

Advisor: Dr. Timothy Johns

Thirty-five medicinal plant species used by the Indigenous Peoples of the boreal forest of Canada for symptoms of diabetes mellitus and its complications were analyzed for antioxidant activity (free, superoxide and peroxy radical scavenging). The majority of the extracts of these species had activity greater than the market produce tested and some had activity similar to green tea. Analysis of the results according to plant part used, plant habit and habitat indicated significant differences that provide insight into selection practices of traditional herbalists. Cluster analysis revealed that if a species was used for a greater number of symptoms, the greater the chance for high antioxidant activity and that certain symptoms and groupings of symptoms could indicate greater activity. Three species were also analyzed in ability to inhibit tumor necrosis factor as a potential affect on insulin resistance. The results scientifically verify the use and gathering practices of traditional plant medicines by Indigenous Peoples in relation to antioxidants and symptoms of diabetes and its complications.

Methods included: Locating and collecting plant specimens, preparation of voucher specimens, extraction and extraction comparison analysis, antioxidant assay determination and experimentation (including microplate assays), cell culture of U937 human monocyte cells and differentiation into mature macrophage (including ELISA assays) and statistical analysis (including applications of SAS<sup>®</sup>, Tukey, Student's t-test, Kruskal-Wallis analysis of rank and cluster analysis). Trained undergraduate and graduate students in laboratory methods.

*Guest Lecturer*

1998, 1999

School of Dietetics and Human Nutrition, McGill University, Montreal, Quebec  
Course: Herbs, Foods and Phytochemicals (382-512A)

Lectured upperclassman and graduate students on "Phytochemicals and Diabetes" within a 1.5 hour time slot (included projecting images to a tele-communication satellite classroom).

*Teaching Assistant*

1994

Department of Plant Science, McGill University, Montreal, Quebec

Course: Plant Physiology (346-353B)

Prepared and assisted in laboratory demonstrations and experiments (3 hour laboratory course/week), was responsible for grading students in the laboratory section of course (including devising and grading weekly quizzes) and held office hours to assist students in lecture and laboratory materials.



*M.Sc. Thesis Research*  
*Laboratory Assistant*

1993-1995  
1993-1995

Department of Plant Science, McGill University, Montreal, Quebec  
Advisor: Dr. S. A. Sparace

Characterization of galactolipid synthesis in pea root plastids: Utilizing radiolabelled acetate and UDP-galactose it was determined that the *in vitro* pathway for monogalactosyldiacylglycerol (MGDG) synthesis in the root plastids of pea (an 18:3 plant) is similar to 16:3 plants (FFA→PA→DAG→MGDG) and that galactolipid synthesis relies primarily on endogenous DAG and only partly involves *de novo* fatty acid synthesis. The results indicated that pea root plastids are capable of MGDG synthesis in amounts comparable to that found in photosynthetic tissues and organelles and indicate that pea root plastids retain their ability for galactolipid biosynthesis after tissue differentiation even though they are nonphotosynthetic, nongreening plastids.

Methods included: Plastid isolation, protein determination, *in vitro* fatty acid synthesis, lipid extraction and product analysis (scintillation counting, TLC double solvent system, methyl esters, GLC and positional analysis).

*Laboratory Technician*

Summer 1993

Department of Animal Science, McGill University, Montreal, Quebec  
Supervisor: Dr. D. Zadworny

Mapping the growth hormone gene of chickens

Methods included: Cloning (competent cells, transfection, digestion, dephosphorylation, plasmid DNA prep., hybridization), Southern Blotting [hybridization, preparation of radioactive probes (nick translation, oligo-labelling, T<sub>7</sub> quick prime)] and DNA Fingerprinting.

*Research Assistant*

1988-1989

Biotechnica International, Inc., Cambridge, MA  
Supervisor: Dr. J. Beynon

Projects: Developed a transformation system for the fungal sensitive tomato, *Lycopersicon esculentum* 'Bonny Best'; cloned an *Arthobacter sp.* β-1, 3-glucanase; started the cloning of the plant glucanase cDNA; prepared an HSV-tk (thymidine kinase) construct for plant expression and analyzed its expression in plants.

Methods included: Bacterial conjugation (bi and tri-parental matings), gel electrophoresis (agarose, PAGE), RFLP analysis, plasmid isolation (minipreps), isolation of DNA fragments from gels using the gene clean procedure, purification of DNA by CsCl density gradient centrifugation, transformation of bacteria and screening of colonies, and subcloning into plasmids (ex. pUC19, pRK290) including blunt-end ligation, addition of DNA-linkers and polymerase chain reaction (PCR).

*Research Technician*

1984-1987

Department of Molecular Biology, Massachusetts General Hospital/  
Department of Genetics, Harvard Medical School  
Supervisor: Dr. G. Lazar of Dr. H. Goodman's team

transformation and resistant selection:

Direct gene transfer (DNA mediated) to protoplasts, *Agrobacterium* mediated transformation of protoplasts and leaf disks, segregation analysis and nopaline tests, gene amplification by stepwise selection pressure, inhibitor sensitivity tests on cell, callus, leaf and shoot cultures and enzyme sensitivity and protein concentration measurements.

callus initiation and tissue propagation:

Sterile germination, callus initiation, embryo initiation, morphogenic induction, clonal propagation and nurse cultures for Arabidopsis, carrot, soybean, alfalfa and tobacco species cultured as protoplast and cell suspensions, callus cultures, leaf disks, shoot cultures, root and embryo cultures.

Tissue culture facility:

Maintained departmental cell line collections as well as tissue culture facility stocks, media, biohazard waste and equipment.

*Laboratory Assistant* part-time 1981-1983  
 Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, NY  
 Supervisor: Dr. T. LaRue

Calculated soybean yields for worldwide field trials; analyzed nodule and total yield for EMS mutated peas; maintained and identified mutant strains of rice; set-up, maintained and calculated yields of cowpea hydro-culture (including kjeldahl analysis and ion exchange chromatography); and conducted normal laboratory assistant duties including media preparation, sterilization of equipment, transferring cultures, setting-up experiments and teaching new assistants.

Independent Research Project: monitored nodule formation re: *Medicago sativa-Rhizobium meliloti* association.  
 Designed and conducted study, analyzed and evaluated different *Rhizobium meliloti* colonies and corresponding nodule formations under different growth conditions, prepared agar media and nutrient solutions and utilized microbiological techniques for sterilization and colony manipulations.

*Undergraduate Work-Study Program* part-time 1981  
 Cornell University, Ithaca, NY

Chemistry Department Stockroom Attendant: Maintained and managed stockroom, assisted in lab exercise organization, distributed equipment and monitored student accounts.

Plant Breeding Department, Cornell Small Grains Crew: Harvested, thrashed, sorted and stored oats, barley and wheat from field plots.

Entomology Department, Bean Ecology: Assisted in planning, set-up and planting experimental field plots.

*Research Aide* part-time 1976, 1980-1981  
 University of British Columbia, Vancouver, B.C.

Division of Human Nutrition: Evaluated and tabulated data from literature searches on native food plants of Canada.

Plant Science Department: Assisted in harvesting and measuring yields of raspberries.

### **Selected Laboratory Technique Experience** (also listed with each position)

Human monocyte/macrophage cell culture

Molecular biology techniques: *Agrobacterium* mediated DNA transfer, direct DNA transfer, RFLP, PCR, cloning, southern blotting, gel electrophoresis, etc.

ELISA assays (including for the biomarkers creatinine, 8-OHdG, isoprostanes, catecholamines and hsCRP)

Antioxidant assays: DPPH (free radical), NBT/XO (superoxide), DCF/AAPH (peroxy)

Lipid extraction and analysis

TLC and GLC

HPLC (trained)

REE (resting energy expenditure measurements)

Hydroponics

Plant extraction techniques (including rotoevaporation, lyophilization, Soxtec<sup>®</sup>)

Plant protoplast, cell, callus, root, leaf, and embryo cultures

Herbarium voucher preparation

Statistical analysis (including applications of SAS<sup>®</sup>, Tukey, Student's t-test, Kruskal-Wallis analysis of rank and cluster analysis)

Human subject certification (CITI@UA)

Laboratory safety certification (UA, McGill, Harvard), Radiation safety certification (McGill, Harvard)

REFERENCES AVAILABLE UPON REQUEST