Mary Ann Lila, PhD
David H. Murdock Distinguished Professor
Professor, Food Bioprocessing and Nutrition Sciences
Director, Plants for Human Health Institute
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EDUCATION

University of Illinois at Urbana-Champaign	Horticultural Sciences	B.Sc.	1978
University of Illinois at Urbana-Champaign	Plant Pathology	M.Sc.	1980
University of Wisconsin at Madison	Plant Biology	Ph.D	1984

PROFESSIONAL EXPERIENCE

1984–1995	Assistant & Associate Professor, Department of Natural Resources & Environmental Sciences, University of Illinois
1991–1992	Visiting Professor, Laboratoire de Phytogenetique Cellulaire, Université de Lausanne, Switzerland
1995-2008	Professor, Department of Natural Resources and Environmental Sciences, Joint appointment, Division of Nutritional Sciences, University of Illinois
1997– 2000	Associate Director, Functional Foods for Health Program, University of Illinois
1999	Visiting Senior Scientist, Plant & Food Research Ltd. (a Crown Research Institute). Palmerston North, New Zealand
2001-2003	Interim Department Head, Natural Resources & Environmental Sciences, University of Illinois
2003–2005	Assistant Dean for Research (50% time), College of ACES, University of Illinois
2005–present	Vice President, Global Institute for BioEXploration (GIBEX)
2006–2007	Interim Associate Dean for Research, College of ACES, University of Illinois
2007-2008	Director, ACES Global Connect (the international arm of the College of ACES), University of Illinois
2008-present	Director, Plants for Human Health Institute, and David H. Murdock Distinguished Professor, Food Bioprocessing, and Nutrition Sciences Department, North Carolina State University

AWARDS AND HONORS

1987-1988	Lilly Endowment Teaching Fellowship
1994–1998	Elected National Correspondent, International Association of Plant Biotechnology
1995	Young Faculty Research Excellence Award, College of ACES
1997	AMOCO Award for Innovation in Undergraduate Instruction
1997–1998	ESCOP Leadership Development Fellowship
1997–1998	CIC Academic Leadership Program Fellowship
1998-1999	Fulbright Senior Scholar Fellowship
2000–2002	President, Society for In Vitro Biology
2000–2002	CIES Fulbright Australasia Review Panel (panel Chair 2002)

2001	Paul A. Funk Recognition Scholarship Award, College of ACES
2003	Elected Fellow, Society for In Vitro Biology
2007	Spitze Land Grant Professorial Career Award
2008–2011	Council for Agricultural Science and Technology (CAST) Board Member
2010-present	David H. Murdock Distinguished Professorship
2015	Tanner Award for most cited manuscript Health Nutrition & Food Section, Journal of Food Science
2020	Babcock-Hart Award, presented through the Institute for Food Technologists
2023	Outstanding Global Engagement Award, NCSU Office of Global Engagement

Scientific Affiliations: American Society for Nutrition, Fulbright Association (Lifetime Member & Senior Scholar Fellow), Gamma Sigma Delta, Groupe Polyphenols, INAF (Institut sur la nutrition et les aliments fonctionnels)/International Scientific Advisory Committee, Institute of Food Technology, International Association of Plant Biotechnology, International Workshop on Anthocyanins (Scientific Advisory Board)

RESEARCH AREA

Over the past two decades, my research has centered on bioactive phytochemical constituents, particularly polyphenolic/flavonoid phytoactives, with demonstrated efficacy against chronic human diseases including CVD, diabetes, metabolic syndrome, cancer, and neurological disorders, and with the capacity to mitigate immunosuppression coincident with strenuous exercise/exertion. The primary emphases in my team are (1) rigorous phytochemical structural characterization (2) elucidation of phytochemical interactions that potentiate benefits for human health maintenance, (3) development of functional ingredients which stabilize the bioactive properties of these otherwise ephemeral constituents, (4) interpretation of bioefficacy, and (5) interpretation of bioavailability and bioaccessibility of plant-derived metabolites. My program leverages our ongoing work with rural native communities to access and examine in depth local botanical resources, including indigenous arctic berry genotypes, featuring highly-concentrated and intricate inherent phytochemical profiles. Our North Carolina State University laboratory is located in the transdisciplinary North Carolina Research Campus that features state-of-the-art instrumentation and resident expertise applicable to this project including phytochemical characterization and bioactivity assays.

ADVISING & CONSULTING

Annual Reviews Food Science & Technology Editorial Board (2016-present), IWA Scientific Advisory Panel (2005-present), Institute of Nutrition & Functional Foods Science Advisory (INAF) (2014-present), Naked Juice Science Advisory (2005-2009), GSK Science Advisory (2021-present), Clorox Renew Life (2019), Access Business Group (Amway) SAB (2020-present), Enviotic SAC (2019), Cranberry Institute SAB (2022-present)

MENTORING

22 MSc. Students, 18 PhD students, 18 Postdoctoral Research Associates, 28 Visiting Scholars

PUBLICATIONS (Past 3 years; total 308 refereed journal articles, 37 book chapters)

308. Ravichandran, K.S., E.S. Silva, M. Moncada, P. Perkins-Veazie, M.A. Lila, C.M. Greenlief, A.L. Thomas, R.T. Hoskin and K. Krishnaswamy. 2023. Spray drying to produce novel phytochemical-rich ingredients from juice and pomace of American elderberry. *Food Bioscience 55*:102981. https://doi.org/10.1016/j.fbio.2023.102981

307. Nieman, David C., Camila A. Sakaguchi, Ashraf M. Omar, Ankhbayar Lkhagva, Mehari Muuz Weldemariam, Kierstin L. David, Cameron E. Shaffner, Renee C. Strauch, Mary Ann Lila and Qibin Zhang. 2023. Blueberry intake elevates post-exercise anti-inflammatory oxylipins. *Scientific Reports 13*.11976 https://doi.org/10.1038/s41598-023-39269-1

306. Hoskin, Roberta, Mary H. Grace, Giuseppe Valacchi *, Anna Guiotto, Alessandra Pecorelli, Mary Ann Lila. 2023. Development of spray dried Spirulina protein-berry pomace polyphenol particles to attenuate pollution-induced skin damage: A convergent food-beauty approach. *Antioxidants* special issue 'Berries in Human Health: Antioxidation, antiinflammation and other modes of action'. Christina Khoo & Mary Ann Lila, editors. *Antioxidants* 12: 1431. https://doi.org/10.3390/antiox12071431

305. Tambe, Mitali, Aurelie De Rus Jacquet, Katherine Strathearn, Gad G. Yousef, Mary H. Grace, Mario G. Ferruzzi, Qingli Wu, James E. Simon, Mary Ann Lila and Jean-Christophe Rochet. 2023. Protective effects of polyphenol-rich extracts against neurotoxicity elicited by paraquat or rotenone in cellular models of Parkinson's disease. Section Health Outcomes of Antioxidants and Oxidative Stress. Dietary Polyphenols and Neuroprotection II. *Antioxidants 12(7):1463*. https://doi.org/10.3390/antiox12071463

304. Ivarsson, J., Alessandra Pecorelli, Mary Ann Lila, Giuseppe Valacchi. 2023. Blueberry supplementation and skin health. *Antioxidants* special issue 'Berries in Human Health: Antioxidation, antiinflammation and other modes of action'. Christina Khoo & Mary Ann Lila, editors. *Antioxidants* 12(6):1261. https://doi.org/10.3390/antiox12061261

303. Hodges, Joanna, Maria Maiz, Sisi Cao, Pamela Lachcik, Munro Peacock, George McCabe, Linda McCabe, Dennis Cladis, George Jackson, Mario Ferruzzi, Mary Ann Lila, Regan Bailey, Berdine Martin & Connie Weaver. 2023. Moderate consumption of freeze-dried blueberry powder increased net bone calcium retention compared with no treatment in healthy postmenopausal women: A randomized crossover trial. *The American Journal of Clinical Nutrition*: In Press. https://doi.org/10.1016/j.ajcnut.2023.05.033

302. Weaver. Connie, M. Ferruzzi, Maria Maiz, Dennis Cladis, Cindy Nakatsu, George P. McCabe & Mary Ann Lila. 2023. Crop, host and gut microbiome variation influence precision nutrition: An example of blueberries. Special issue "Berries in Human Health: Antioxidation, Anti-inflammation and Other Modes of Action" Christina Khoo & Mary Ann Lila, editors. *Antioxidants* 12(6):1136. https://doi.org/10.3390/antiox12051136

301. Iorizzo, M., Lila, M.A., Perkins-Veazie, P., Luby, C., Vorsa, N., Edger, P., Bassil, N., Munoz, P., Zalapa, J., Gallardo, R.K., Atucha, A., Main, D., Giongo, L., Li, C., Polashock, J., Sims, C., Canales, E., DeVetter, L., Coe, M., Chagné, D., Colonna, A. and Espley, R. 2023. VacciniumCAP, a community-based project to develop advanced genetic tools to improve fruit quality in blueberry and cranberry. Acta Hortic. 1362, 71-80. XXXI International Horticultural Congress (IHC2022): International Symposium

on Breeding and Effective Use of Biotechnology and Molecular Tools in Horticultural Crops DOI: 10.17660/ActaHortic.2023.1362.11 https://doi.org/10.17660/ActaHortic.2023.1362.11

300. Hoskin, Roberta Targino, Mary H. Grace, Jia Xiong and Mary Ann Lila. 2023. Spray drying microencapsulation of blackcurrant and cocoa polyphenols using underexplored plant-based protein sources. *Journal of Food Science* 88:2665-2678. DOI: 10.1111/1750-3841.16590

299. Iorizzo, M., Lila, M.A., Perkins-Veazie, P., Pottoroff, M., Finn, C., Luby, C., Vorsa, N., Edger, P., Bassil, N., Munoz, P., Zalapa, J., Gallardo, R.K., Atucha, A., Main, D., Giongo, L., Li, C., Polashock, J., Sims, C., Canales, E., DeVetter, L., Coe, M., Chagné, D., Colonna, A. and Espley, R. 2023. VacciniumCAP, a community-based project to develop advanced genetic tools to improve fruit quality in blueberry and cranberry. Acta Hortic. 1357. ISHS 2023. DOI 10.17660/ActaHortic.2023.1357.57 Proc. XII International Vaccinium Symposium Eds.: D. Percival et al.

298. Perkins-Veazie, P., G. Ma, M. Pottorff, M.A. Lila and M. Iorizzo. 2023. New tools for rapid fruit quality analysis in blueberry. Proc. XII International *Vaccinium* Symposium. (D. Percival, J. Polashock, J. Retamales, eds.) Acta Horic. 1357: 193-197. ISHS 2023, DOI 10.17660/ActaHortic.2023.1357.28

*297. Xiong, Jia, Mary H. Grace, Hideka Kobayashi and Mary Ann Lila. 2023. Evaluation of saffron extract bioactivities relevant to skin resilience. *Journal of Herbal Medicine* 37(2023) 100629. https://doi.org/10.1016/j.hermed.2023.100629

*296. Wu, Haizhou, Gabriel Oliveira & Mary Ann Lila. 2023. Protein-binding approaches for improving bioaccessibility and bioavailability of anthocyanins. *Comprehensive Reviews in Food Science and Food Safety* 22(1): 333-354. https://doi.org/10.1111/1541-4337.13070

295. Lila, Mary Ann, Roberta Hoskin, Mary H. Grace, Jia Xiong, Renee Strauch, Mario Ferruzzi, Massimo Iorizzo & Colin Kay. 2022. Boosting the bioaccessibility of dietary bioactives by delivery as protein-polyphenol aggregate particles. *Journal of Agricultural and Food Chemistry* 70: 13017-13026:. https://doi.org/10.1021/acs.jafc.2c00398

294. Mengist, Molla Fentie, Hamed Bostan, Domenico De Paola, Scott Teresi, Adrian Platts, Gaetana Cremona, Qi Xinpeng, Ted Mackey, Nahla Bassil, Hamid Ashrafi, Lara Giongo, Rubina Jibran, David Chagne, Luca Bianco, Mary Ann Lila , Jeannine Rowland, Marina Iovene, Patrick Edger and Massimo Iorizzo. 2022. Autopolyploid inheritance and a heterozygous reciprocal translocation shape chromosome genetic behavior in tetraploid blueberry (*Vaccinium corymbosum*). *New Phytologist* 2022:1-16 Open Access. DOI: 10.1111/nph.18428

293. Cheatham, Carol, Grant Canipe, Grace Millsap, Julie M Stegall, Sheau Ching Chai, Kelly W Sheppard, Mary Ann Lila. 2022. Six-month intervention with wild blueberries improved speed of processing in mild cognitive decline: a double-blind, placebo-controlled, randomized clinical trial. *Nutritional Neuroscience*: 1-15. Open Access. doi 10.1080/1028415X.2022.2117475

292. Mengist, Molla Fentie, Mary H. Grace, Ted Mackey, Bryan Munoz, Boas Pucker, Nahla Bassil, Claire Luby, Mario Ferruzzi, Mary Ann Lila and Massimo Iorizzo. 2022. Dissectng the genetic basis of bioactive metabolites and fruit quality traits in blueberries

(*Vaccinium corymbosum* L). *Frontiers in Plant Science 02 September 2022:01-18.* Open Access. https://doi.org/10.3389/fpls.2022.964656

291. Edger, Patrick, Massimo Iorizzo, Nahla V. Bassil, Juliana Benevenuto, Felipe Ferrao, Lara Giongo, Kim Hummer, Lovely Mae F. Lawas, Courtney P. Leisner, Charlie Li, Patricio Munoz, Hamid Ashrafi, Amaya Atucha, Ebrahiem Babiker, Elizabeth Canales, David Chagne, Lisa DeVetter, Mark Ehlenfeldt, Richard V. Espley, Karina Gallardo, Catrin S. Günther, Michael Hardigan, Amanda Hulse-Kemp, MacKenzie Jacobs, Mary Ann Lila, Claire Luby, Doreen Main, Gregory Owens, Penelope Perkins-Veazie, Jim Polashock, Marti Pottorff, Lisa J. Rowland, Charles A. Sims, Guo-qing Song, Jessica Spencer, Nick Vorsa, Alan E. Yocca, Juan Zalapa. 2022. There and back again; historical perspective and future directions for *Vaccinium* breeding and research studies. *Horticulture Research* 9: uhac083 https://doi.org/10.1093/hr/uhac083

290. Grace, Mary H., Roberta Hoskin, Micaela Hayes, Massimo Iorizzo, Colin Kay, Mario Ferruzzi & Mary Ann Lila. 2022. *Spray dried and freeze-dried protein-spinach particles; effect of drying technique and protein type on the bioaccessibility of carotenoids, chlorophylls, and phenolics. Food Chemistry* 388*:* 133017. https://doi.org/10.1016/j.foodchem.2022.133017

289. Hayes, Micaela, Zulfiqar Mohamedshah, Sydney Chadwick-Corbin, Roberta Hoskin, Massimo Iorizzo, Mary Ann Lila, Andrew Neilson & Mario G. Ferruzzi. 2022. Bioaccessibility and intestinal cell uptake of carotenoids and chlorophylls differ in powdered spinach by ingredient form as measured with an in vitro gastrointestinal digestion, anaerobic fecal fermentation model. *Food&Function* 13:3825-3839. https://doi.org/10.1039/d2fo00051b

288. Hoskin, Roberta Targino, Nathalie Plundrich, Amanda Vargochik and Mary Ann Lila. 2022. Continuous flow microwave-assisted aqueous extraction of pomace phytoactives for production of protein-polyphenol particles and a protein-enriched ready-to-drink beverage. *Future Foods* 5: 100137. https://doi.org/10.1016/j.fufo.2022.100137

287. Cheatham, Carol, David Nieman, Andrew Neilson and Mary Ann Lila. 2022. Enhancing the cognitive effects of flavonoids with physical activity: Is there a case for the gut microbiome? *Frontiers in Neuroscience* 16:833202. Gut-Brain Axis section. doi.org/10.3389/fnins.2022.833202

286. Komarnytsky, S., Sophia Retchin, Chi In Vong and Mary Ann Lila. 2022. Gains and losses of agricultural food production: Implications for the 21st century. *Annual Review of Food Science & Technology* 13: 4.1-4.23. https://doi.org/10.1146/annurev-food-082421-114831

285. Kay, Kristine L., Renee C. Strauch, Cheryl D. Granillo, Megan W. Bame, Jia Xiong, Aubrey C. Mast, Britt Burton-Freeman, Colin D. Kay and Mary Ann Lila. 2022. The Berry Health Tool Chest – an evidence map and interactive resource. *Nutrition Reviews 80*: 68-77. doi: 10.1093/nutrit/nuab011. PMID: 33837434.

*84. Diaz, Joscelin, E. Allen Foegeding, Lee Stapleton, Colin Kay, Massimo Iorrizo, Mario G. Ferruzzi and Mary Ann Lila. 2022. Foaming and sensory characteristics of protein-polyphenol particles in a food matrix. *Food Hydrocolloids* 123: 107148 https://doi.org/10.1016/j.foodhyd.2021.107148

283. Lujan, Phillip A., Srijana Dura, Ivette Guzman, Mary Grace, Mary Ann Lila, Robert Steiner and Soum Sanogo. 2021. Efficacy of pecan husk and shell phenolic extracts

against Phytophthora blight in chile pepper. *Plant Health Progress 22*: 342-347. https://doi-org.prox.lib.ncsu.edu/10.1094/PHP-02-21-0024-FI

282. de Rus Jacquet, Aurélie, Abeje Ambaw, Mitali Arun Tambe, Sin Ying Ma, Michael Timmers, Mary Grace, Qing-Li Wu, James Simon, George P. McCabe, Mary Ann Lila, Riyi Shi and Jean-Christophe Rochet. 2021. Neuroprotective mechanisms of red clover and soy isoflavones in Parkinson's disease models. *Food & Function 12*: 11987-12007 DOI: 10.1039/d1fo00007a

281. Pambianchi, Erika, Zachary Hagenberg, Alessandra Pecorelli, Mary Grace, J-P. Therrien, Mary Ann Lila and Giuseppe Valacchi. 2021. Alaskan Bog blueberry extract as an innovative topical approach to prevent UV-induced skin damage. *Cosmetics* 8:112. https://doi.org/10.3390/cosmetics8040112

280. Lila, Mary Ann, Jia Xiong, Mary H. Grace, Thiru Rathinasabapathy, Slavko Komarnytsky, Mario Ferruzzi, Colin Kay, Massimo Iorizzo. 2021. Boosting the bioaccessibility of dietary polyphenols by delivery as colloidal aggregate protein-polyphenol particles. Polyphenols Communications 2021. 02.18:84-85.

279. Hayes, Micaela, Sydney Corbin, Candace Nunn, Marti Pottorff, Colin Kay, Mary Ann Lila, Massimo Iorizzo and Mario G. Ferruzzi. 2021. Influence of simulated food and oral processing on carotenoid and chlorophyll *in vitro* bioaccessibility among six spinach genotypes. *Food & Function* 12:7001-7016. doi 10.1039/d1fo00600b

278. Mengist, Molla, Hamed Bostan, Elisheba Young, Kristine Kay, Nicholas Gillitt, James Ballington, Colin Kay, Mario Ferruzzi, Hamid Ashrafi, and Mary Ann Lila. 2021. High density linkage map construction and identification of loci regulating fruit quality traits in blueberry. *Horticulture Research* 8:169. https://doi.org/10.1038/s41438-021-00605-z

277. Strauch, Renee and Mary Ann Lila. 2021. Pea protein isolate characteristics modulate functional properties of pea protein-cranberry polyphenol particles. *Food Science & Nutrition* 9:3740-3751. DOI: 10.1002/fsn3.2335

276. Damsud, Thanakorn, Thitiworrada Tedphum, Chadaporn Sukkrong and Mary Ann Lila. 2021. Anti-diabetic potential of cashew nut (*Anacardium occidentale*) shoots and leaves extracts under simulated *in vitro* digestion. 2021. *Science & Technology Asia* 26 (2):138-144. P-ISSN 2586-9000. E-ISSN 2586-9027

275. Hoskin, Roberta, Erika Pambianchi, Alessandra Pecorelli, Mary Grace, Jean-Philippe Therrien, Giuseppe Valacchi and Mary Ann Lila. 2021. Novel spray dried algae-rosemary particles attenuate pollution-induced skin damage. *Molecules 26*:3781. https://doi.org/10.3390/molecules26133781

274. Grace, Mary H., Roberta Hoskin, Jia Xiong and Mary Ann Lila. 2021. Whey and soy proteins as wall materials for spray drying rosemary: effects on polyphenol composition, antioxidant activity, bioaccessibility after in vitro gastrointestinal digestion and stability during storage *LWT Food Science & Technology* 149: 111901. https://doi.org/10.1016/j.lwt.2021.111901

273. Sato, Amy Y., Gretel G. Pellegrini, Meloney Cregor, Kevin McAndrews, Roy B. Choi, Maria Maiz, Olivia Johnson, Linda D. McCabe, George P. McCabe, Mario G. Ferruzzi, Mary A. Lila, Munro Peacock, David B. Burr, Cindy H. Nakatsu, Connie M. Weaver, Teresita Bellido. 2021. Skeletal protection and promotion of microbiome diversity by dietary boosting of the endogenous antioxidant response. *Journal of Bone & Mineral Research* 36(4):768-778. doi: 10.1002/jbmr.4231

272. Woodby, Brittany, Erika Pambianchi, Francesca Ferrara, Jean-Philippe Therrien, Alessandra Pecorelli, Nicola Messano, Mary Ann Lila, Giuseppe Valacchi. 2021. Cutaneous Antimicrobial Peptides: new "actors" in pollution related inflammatory conditions. *Redox Biology* 41:101952 https://doi.org/10.1016/j.redox.2021.101952

271. McClements, David Julian, Rodolphe Barrangou, Colin Hill, Josef L. Kokini, Mary Ann Lila, Anne S. Meyer and Liangli Yu. 2021. Building a resilient, sustainable, and healthier food supply through innovation and technology. *Annual Reviews Food Science & Technology* 12:6.1-6.28. https://doi.org/10.1146/annurev-food-092220-030824

270. Lawrence, Marcus M., Kevin A. Zwetsloot, Susan T. Arthur, Chase A. Sherman, Joshua R. Huot, Vladimir Badmaev, Mary Grace, Mary Ann Lila, David C. Nieman, and R. Andrew Shanely. 2021. Phytoecdysteroids do not have anabolic effects in skeletal muscle in sedentary aging mice. *International Journal of Environmental Research and Public Health* 18:370. 10.3390/ijerph-1048817

269. Hughes, Nicole, Michaela K. Connors, Mary H. Grace, Mary Ann Lila, Brooke N. Willans, Andrew J. Wommack. 2021. The same anthocyanins served four different ways: Insights into anthocyanin structure-function relationships from the wintergreen orchid, *Tipularia discolor*. *Plant Science 303:* 110793. https://doi.org/10.1016/j.plantsci.2020.110793

268. Diaz, Joscelin, E. Allen Foegeding and Mary Ann Lila. 2021. Whey protein-polyphenol aggregate particles mitigate bar hardening reactions in high protein bars. *LWT Food Science & Technology* 138:110747 https://doi.org/10.1016/j.lwt.2020.110747