

Curriculum Vitae

Mary A. O'Connell, Ph.D.

Regent's Professor
Distinguished Achievement Professor

Department of Plant & Environmental Sciences
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Research Scholarship

My bench science research programs address three topics: molecular genetics of fruit quality traits in *Capsicum*; drug discovery of novel anti-cancer leads in plants; and plant responses to biotic and abiotic stresses. In the last few years we have started programs in public health education, and now we also measure the effectiveness of educational efforts in cancer prevention and screening programs.

Education

B.S., Biology, Chemistry 1975, College of Mount St. Vincent, Riverdale, NY
Ph.D., Biochemistry 1980, Cornell Univ., Graduate School of Medical Sciences, NY, NY

Positions and Employment

1975-1980 Research Assistant, Memorial Sloan-Kettering Div., Cornell Univ, NY, NY
1980-1982 Postdoctoral Trainee, Dept. Chemistry, UC, San Diego, CA
1982-1985 Research Associate, Dept. Biology, Univ. Virginia, Charlottesville, VA
1985-1991 Assistant Professor, Horticulture (later merged to create Agronomy & Horticulture), NMSU, Las Cruces, NM
1991-1996 Associate Professor, Agronomy & Horticulture, NMSU
1996-present Professor, Plant & Environmental Sciences (formerly Agronomy & Horticulture), NMSU

Other Experience

1986-present Graduate Faculty member, NMSU (current term expires May 2, 2020)
1987-1998 Joint Appointment in Graduate Program in Molecular Biology, NMSU
1996-1998 Outreach Coordinator for National Biotechnology Information Facility, NMSU
1997 Panel Member, USDA-NRRCGP Plant Genome
2001 Panel Member, National Institutes of Health (NIH) Initiative for Maximizing Student Diversity (IMSD) program
2001-2004 Steering Committee Member, NM Biomedical Research Infrastructure Network
2002-2006 Panel Member, NIH National Institute of General Medical Sciences Minority Biomedical Research Support sub-committee
2003-present Director, Minority Institution Cancer Center Partnership, NMSU/FHCRC Advancing Cancer Research
2004 Panel Member, NIH National Cancer Institute, Study Section, National Cooperative Drug Discovery Groups for Cancer
2006-present Member, Growing Biotechnology and Environmental Research Initiatives Advisory Board, Northern Arizona University
2006-present Ad Hoc member of numerous NIH special emphasis grant review panels
2009 Panel Member, USDA AFRI Plant Stress
2009-2013 Administrative Lead, Biospecimen/Biobanking Management Plan, NCI Center to Reduce Cancer Health Disparities, Region 4 [AZ, CO, NM, OK, TX]
2010-2013 Member, ACES Visioning Team, NMSU
2015-2018 Member Team 5 – Transforming NMSU into a 21st Century University

Honors

1997	Distinguished Research Award, College of Agriculture & Home Economics
2004	NACTA Teaching Award of Merit, College of Agriculture and Home Economics
2006	Regent's Professor
2008	NMSU Environmental Health & Safety "Friend of Safety" Award
2012	Distinguished Achievement Professor
2014	Westhafer Award for Excellence in Research, New Mexico State University
2016	Outstanding Faculty Mentor, Teaching Academy, New Mexico State University

Efforts in Minority Student Training

NIH Minority Access to Research Careers, mentor 1986 to present
NIH Minority Biomedical Research Support/RISE program, mentor 1990 to present
NIH Bridges to Native Americans Program, mentor 1992 to present
NIH RISE Medicinal Plants of the Southwest, director 2000 to 2009

Teaching

Hort 310 Medicinal Herbs (spring terms)
Gene 452 Applied Bioinformatics (fall terms)

Recent Publications (last ~10 years; total 96 since 1979)

graduate student authors; undergraduate authors

- Richins, R.D., O'Connell, M.A. (2018) Cannabinoid and terpenoid extraction and analysis. Protocols.io [dx.doi.org/10.17504/protocols.io.rd4d28w](https://doi.org/10.17504/protocols.io.rd4d28w)
- Richins, R.D., Rodriguez-Uribe, L., Lowe, K., Ferral, R., O'Connell, MA (2018) Accumulation of bioactive metabolites in cultivated medical *Cannabis*. PLoS ONE 13(7):e0201119. <https://doi.org/10.1371/journal.pone.0201119>
- Nedjat-Haiem, F.R., Carrion, I.V., Gonzalez, K., Ell, K., O'Connell, M., Thompson, B., Mishra, S.I. (2018) Exploring motivational interviewing to engage Latinos in advance care planning: A community-based social work intervention. Amer J Hospice Palliative Med 35(8):1091-1098 <https://doi.org/10.1177/1049909118763796>
- Vilchis H, Onstad LE, Benavides R, Castillo R, Bush N, Sanchez J, O'Connell M, Thompson B, Moinpour CM (2017) Una Mano Amiga: Pilot Test of a Patient Navigator Program for Southwest New Mexico. J Cancer Educ <https://doi.org/10.1007/s13187-017-1283-7>
- Molina Y, Briant KJ, Sanchez JI, O'Connell MA, Thompson B (2018) Knowledge and social engagement change in intention to be screened for colorectal cancer. Ethnicity & Health 23:461-479. <http://dx.doi.org/10.1080/13557858.2017.1280135> [online in 2017, in print in 2018]
- Huang J, Heyduck R, Richins RD, Van Leeuwen D, O'Connell MA, Yao S (2017) Jujube cultivar vitamin C profile and nutrient dynamics during maturation, submitted *HortScience* 52(6):1-9 doi: 10.21273/HORTSCI11945-17
- Nedjat-Haiem F, Carrion I, Gonzalez K, Quintana A, Ell K, O'Connell M, Thompson B, Mishra S (2017) Implementing an Advance Care Planning Intervention in Community-Settings with Older Latinos: A Feasibility Study. Journal of Palliative Medicine DOI: 10.1089/jpm.2016.0504
- Gaire S, O'Connell M, Holguin FO, Amatya A, Bundy S, Romero A (2017) Insecticidal properties of essential oils and some of their constituents on the Turkestan cockroach, *Blatta lateralis* (Blattodea: Blattidae), *J Econ Entomol* 110: 584-592.
- Trejo-Calzada R, O'Connell MA, Pedroza-Sandoval A, Arreola-Avila JG, Reveles-Hernandez M (2016) Diversity of drought-responsive genes in central and peripheral populations of *Trifolium purpureum* Loisel. Rev. Fitotec. Mex. 39:9-15.

- Oushy MH, Palacios R, Holden AEC, Ramirez AG, Gallion KJ, O'Connell MA (2015) To Share or Not to Share? A survey of biomedical researchers in the U.S. southwest an ethnically diverse region. PLoS ONE 10(9): e0138239. doi:10.1371/journal.pone.0138239
- Jones RF, Bosland PW, Steiner RL, Jones RW, O'Connell MA (2015) Detection of gene expression changes in *Capsicum annuum* L. leaf foliar blight caused by *Phytophthora capsici* Leon. using qRT-PCR and leaf discs. HortScience 50 (9): 1342-1348.
- Kilcrease J, Rodriguez-Uribe L, Richins RD, Garcia Arcos JM, Victorino J, O'Connell MA (2015) Correlations of carotenoid content and transcript abundances for fibrillin and carotenogenic enzymes in *Capsicum annuum* fruit pericarp. Plant Science 232: 57-66. Doi:10.1016/j.plantsci.2014.12.014
- Rodriguez-Uribe L, Hernandez L, Kilcrease JP, Walker S, O'Connell MA (2014) Capsaicinoid and Carotenoid Composition and Genetic Diversity in New Mexican *Capsicum annuum* L. Landraces. HortScience 49:1370-1375.
- Richins, RD, Kilcrease, J, Rodriguez-Uribe, L, O'Connell, MA, (2014) Carotenoid Extraction and Quantification from *Capsicum annuum*. Bio-Protocol 4 (19): e1256 <http://www.bio-protocol.org/e1256>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4996634/>
- Sanchez, JI, Palacios R, Cole A, O'Connell MA. (2014) Evaluation of the walk-through inflatable colon as a colorectal cancer educational tool: Results from a pre and post research design. BMC Cancer 14:626 doi:10.1186/1471-2407-14-626 (<http://www.biomedcentral.com/1471-2407/14/626>)
- Keyhaninejad N, Curry J, Romero J, O'Connell MA. (2014) Fruit specific variability in capsaicinoid accumulation and transcription of structural and regulatory genes in *Capsicum* fruit. Plant Sci. 215-216:59-68. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3882758/>
<http://www.sciencedirect.com/science/article/pii/S0168945213002306#>
- Kilcrease J, Collins AM, Richins RD, Timlin JA, O'Connell MA (2013) Multiple microscopic approaches demonstrate linkage between chromoplast architecture and carotenoid composition in diverse *Capsicum annuum* fruit. Plant Journal 76:1074-1083.
- Kilcrease J, Richins RD, O'Connell M(2013). Chile Pepper Carotenoids: The Link Between Color and Sub-Cellular Morphology. Microscopy and Microanalysis, 19 (Suppl. 2), pp 102-103. doi:10.1017/S143192761300250X.
- Suzuki H, Yu J, Ness SA, O'Connell MA, Zhang J (2013) RNA editing events in mitochondrial genes by ultra-deep sequencing methods: a comparison of cytoplasmic male sterile, fertile and restored genotypes in cotton. Molec Gen Genet 288: 445-457. (doi:10.1007/s00438-013-0764-6)
- Sanchez JI, Palacios R, Martinez V, Thompson B, O'Connell MA. (2013) Assessing colorectal cancer screening behaviors and knowledge among at-risk Hispanics in southern New Mexico. J Cancer Therapy 4:15-25. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4303072/>
- Thompson B, O'Connell M, Loest H, Anderson J, Westcott R (2013) Understanding and reducing obstacles in a collaboration between a minority institution and a cancer center. J Health Care Poor Underserv 24:1634-1656. (DOI: 10.1353/hpu.2013.0167)
- Löest, H., Anderson, J., Thompson, B., O'Connell, M. (2012) Mentoring junior investigators for career success. University of New Mexico Mentoring Conference Proceedings.
- Martin, C.A., Rodriguez, J., O'Connell, M. Steiner, R., Yao, S. (2012) Lavender cultivar trial results for north-central New Mexico, 2003 through 2005. NM AES RR-770.
- Kilcrease, J., O'Connell M., Cooke P. (2012). *Chile Pigments: Origin and Architecture*. Microscopy and Microanalysis, 18 (Suppl. 2), pp 126-127. doi:10.1017/S1431927612002486.
- Keyhaninejad, N., Richins R.D., O'Connell, M.A. (2012) Carotenoid content in field grown versus greenhouse grown peppers: different responses in leaf and fruit. HortScience 47: 852-855.

- Rodriguez-Uribe, L., Guzman, I., Rajapakse, W., Richins, R.D., O'Connell, M.A. (2012) Carotenoid accumulation in orange pigmented *Capsicum annuum* fruit, regulated at multiple levels. J. Exp. Bot. 63:517-526. PMID:21948863
- Vermillion, K., Holguin, F.O., Berhow, M.A., Richins, R.D., Redhouse, T., O'Connell, M.A., Posakony, J., Mahajan, S.S., Kelly, S.M., and Simon, J.A. (2011) Dinoxin B, a withanolide from *Datura innoxia* leaf with specific cytotoxic activities. J. Nat. Prod. 74:267–271 PMID: 21280589
- Guzman, I., Bosland, P.W., O'Connell, M.A. (2011) Heat, Color and Flavor Compounds in Capsicum Fruit. In: D.R. Gang (ed.), *The Biological Activity of Phytochemicals*, Recent Advances in Phytochemistry 41: 109-126.
- Guzman, I., Hambly, S., Romero, J., Bosland, P.W., O'Connell, M.A. (2010) Variability of Carotenoid Biosynthesis in Orange Colored *Capsicum* spp. Plant Science, 179:49-59. <http://authors.elsevier.com/offsprints/PSL8230/bd0b6f485671634c66dee83cb2a2fe29> PMID: 20582146
- Richins, R.D., Hernandez, L., Dungan, B., Hambly, S., Holguin, F.O., O'Connell, M.A. (2010) A "green" extraction protocol to recover red pigments from hot *Capsicum* fruit. HortScience 45:1084-1087.
- Richins, R.D., Micheletto, S., O'Connell, M.A. (2010) Gene Expression Profiles Unique to Chile (*Capsicum annuum* L.) Resistant to *Phytophthora* Root Rot. Plant Sci. 178:192–201
- Wang, F., Feng, C., O'Connell, M.A., Stewart, J. McD., Zhang, J. (2010) RFLP Analysis of Mitochondrial DNA in Two Cytoplasmic Male Sterility Systems (CMS-D2 and CMS-D8) of Cotton. Euphytica 172:93-99.
- Coronado GD, O'Connell MA, Anderson J, Löest H, Ogaz D, Thompson B (2010) Undergraduate cancer training program for underrepresented students: findings from a minority institution/ cancer center partnership. J Cancer Educ 25:32-35. PMID: 20082168
- Medina-Holguín AL, Holguín FO, Micheletto S, Goehle S, Simon JA, O'Connell MA (2008) Chemotypic variation of essential oils in the medicinal plant, *Anemopsis californica*. Phytochemistry 69: 919-927. Pubmed # 18177907
- Khalil, S.K., St. Hilaire, R., O'Connell, M.A., Mexal, J. (2008) Horticulturists can grow Moonshine Yarrow on a limited moisture budget J. Env. Hort. 26:70-74.

Patents:

PCT/US11/29455 D. INNOXIA WITHANOLIDES WITH SPECIFIC ANTI-CANCER ACTIVITIES, issued September 22, 2011
Invention: Dinoxin B, a compound from *Datura innoxia* for the treatment of cancer
Inventors: Mary O'Connell, F. Omar Holguin, Richard Richins, Mark Berhow, Karl Vermillion, Julian Simon, Jeffrey Posakony
NIH EIR: 0861001-09-0020 Docket: FH TID 10-014

Other Products:

Produced and published videos of Bioinformatics Training workshop:

<http://aces.nmsu.edu/bioinformatics/index.html>

These videos provide detailed training information on a number of tools for data mining in biomedical research, specific applications for access and analysis of **The Cancer Genome Atlas (TCGA)**.

NSF funded dissemination project to identify and then promote "Best practices for Recruitment and Retention of Women Faculty in STEM"; training presentation developed and sent to top 50 departments at US universities in 15 STEM disciplines, or download

<http://diversefaculty.nmsu.edu>

Recent Invited Presentations

- "Sensory properties of New Mexican crops: *Capsicum*, *Cannabis*, & *Lavendula*" Salon
Discovery, NMSU, March 24, 2016
- "Polish Your Personal Statement", NM INBRE annual conference, Santa Fe, NM, March 20,
2016
- "Medicinal Plants of the US Southwest", Western Society of Weed Science, Albuquerque, NM
March 8, 2016
- "Leading In Place", NMSU Advancing Leaders Panel, Teaching Academy, April 10, 2015
- "Red and Hot Metabolism in *Capsicum* Fruit", Purdue University, West Lafayette, IN, January
29, 2015
- "En busca de nuevas moléculas (In search of new molecules)"; Sociedad de Oncología y
Especialidades Afines, Mazatlan, Mexico, November 14, 2014
- "Medicinal Plants Native to the US Southwest"; Native Plant Society of New Mexico, annual
conference, El Paso TX, August 1, 2014
- "Investing in Junior Investigators", NIH, National Cancer Institute, Center to Reduce Cancer
Health Disparities Directors Meeting, Bethesda MD, July 27 – 29, 2014
- "Chiles: linking phytochemistry and healthy behaviors"; UTEP Center for Interdisciplinary Health
Research and Evaluation, Healthy Exchange, El Paso TX, October 9, 2013
- "Assessing colorectal cancer screening behaviors and knowledge among at-risk Hispanics in
southern New Mexico"; Medical Centers of America, Biomedical Research Symposium, El
Paso TX, October 26, 2013
- "Red or Green: that is the question"; Santa Fe Native Plant Society, Santa Fe NM, May 22,
2013
- "Medicinal Plants of the Mesilla Valley"; Desert Daubers, Garden Club, Mesilla NM February 5,
2013
- "Measuring chemical composition in yerba mansa populations, a medicinal plant in the US
southwest", Industrial Crops: Developing Sustainable Solutions, The Association for the
Advancement of Industrial Crops, Sonoma CA, November 2012
- "Red or Green: That is the question", ASPB "Food for Thought", American Society of Plant
Biologists, Albuquerque NM, September 2012
- "Regional Medicinal Plants: Safe to use or Sources of Concern", NM School Nurses Association
Conference, NM School Nurses Association, Las Cruces, NM, July 2012
- "Medicinal Plants of the Mesilla Valley", Master Gardeners Annual Conference, NM CES, Las
Cruces, NM, June 2012.
- "Effective Strategies to Diversify Faculty", NMSU Administrator's Retreat, Las Cruces, NM, May,
2012.
- "Medicinal Plants of the Chihuahuan Desert", Early College High School, El Paso TX, May 2012
- "Medicinal Plants of the Chihuahuan Desert - know what to look for", Tech2O Science Cafe,
UTEP, Sigma Xi, and El Paso Water, El Paso TX, April 2012
- "Grant Writing Workshop", NMSU Teaching Academy, Las Cruces, NM, March 2012
- "Medicinal Plants of the Mesilla Valley", Native Plant Society, Las Cruces, NM February 2012
- "Southwestern Medicinal Plants Sources of New Drugs Using Ethnobotanical Knowledge",
Department of Biology, University of Texas at El Paso, November 2011
- "Partnerships and Networks to Reduce Cancer Health Disparities", Paul L. Foster School of
Medicine, Texas Tech University, El Paso TX, October 2011
- "Effective Strategies to Diversify STEM Faculty", WV EPSCOR Building Diversity in Higher
Education Conference, Charleston, WV October 2008
- "Regional Variation in Medicinal Plant Biochemistry: Implications for Collection and
Conservation", Intertribal Nursery Council 2008 Annual Meeting, Albuquerque, NM
September 2008

- "Some Like It Hot", Iowa State University, Ames, IA, October 2007
Panelist for Building the Pipeline Session at the MI/CCP Investigators Workshop, National Institutes of Health, Bethesda, MD, September 2007
"Simple and Complex Genetic Controls of Bioactive Compounds: Capsaicin For Example", University of New Mexico, Albuquerque, February 2007
"Medicinal Plants (series of 3 seminars)", Thammasat University, Bangkok, Thailand, January 2007

Active Research Projects

O'Connell, MA (MPI; Unguez, G. PI) Partnership for the Advancement of Cancer Research: NMSU/FHCRC", Sponsoring Organization: US Department of Health & Human Services/National Cancer Institute/NIH(DHHS), Total Award: \$5,812,361, (September 18, 2018 - August 31, 2023).

Recent Completed Funded Sponsored Research (2008 to present)

- O'Connell, M.A. (Principal), "Development of Plants Rich in Bioactive Metabolites for production in Semi-Arid Regions", Sponsoring Organization: USDA NIFA "Hatch Award", (October 1, 2013 – September 30, 2018).
- O'Connell, M.A. (Principal), "Improved Red Pigment Production in New Mexico Chiles", New Mexico Chile Association, \$130,000, (July 1, 2016– June 30, 2018).
- O'Connell, M. A. (Principal), "Partnership for the Advancement of Cancer Research: NMSU/FHCRC", Sponsoring Organization: US Department of Health & Human Services/National Cancer Institute/NIH(DHHS), Total Award: \$2,443,192.00, (September 25, 2013 - August 31, 2018).
- O'Connell, M.A. (Principal), "Improved Oleoresin Processing for Pigment Production", New Mexico Chile Association, \$60,000, (July 1, 2014 – June 30, 2015).
- O'Connell, M. A. (Principal), "Genes Contributing to Phytophthora Resistance", Sub-contract with USDA ARS, \$72,000 (Aug 2011 - Aug 2015).
- O'Connell, M. A. (Principal), "Administrative Supplements for NON CHE to Partnership for the Advancement of Cancer Research: NMSU-FHCRC", Sponsoring Organization: US Department of Health & Human Services/National Cancer Institute/NIH (DHHS), \$371,773 (Sep 2010 – Aug 2015).
- O'Connell, M. A. (Principal), "Administrative Supplements to Support Assessment of Community Outreach Activities of the CNPC and CPACHE", Sponsoring Organization: US Department of Health & Human Services/National Cancer Institute/NIH (DHHS), Total Award: \$99,993.00, (September 1, 2014 - August 31, 2015).
- O'Connell, M. A. (Principal), Characterization of Secondary Metabolism in Plants Grown in or Native to Semi-Arid Regions. NMAES/Hatch, \$50,000 (Oct 2008 – Sep 2013).
- O'Connell, M. A. (Principal), Partnership for the Advancement of Cancer Research: NMSU-FHCRC Dr. O'Connell also directs a research project "Development of Biologically-Active Datura Extract as a Breast Cancer Therapy". NIH NCI CRCHD, \$5.6M (Sep 2007 - Aug 2012).
- O'Connell, M. A. (Principal), Minority Biospecimen/Biobanking –Geographic Management Program (BMaP) Plan–Supplemental awards to the U54 Partnership project from NIH NCI CRCHD \$457,892 (total) (Sep 2009 - Aug 2012).
- O'Connell, M. A. (Principal), "Cataloging Genes Associated with Drought and Disease Resistance, NM," USDA NIFA, two awards covering period Jul 2008 – Aug 2012, \$338,170
- O'Connell, M. A. (Principal), "Plant, Drought & Disease Resistance Gene Cataloguing, NM," USDA CSREES, \$215,343 (Jul 2006 - Jun 2008).
- O'Connell, M. A. (Principal; co-PIs Serrano and Frehill), "Effective Strategies to Diversify Academic Stem," NSF, \$219,829. (Jan 2005 - Jun 2008).

- O'Connell, M. A. (Principal), "Subproject For Institution #20040771 - NSF/Effective Strategies To Diversify Academic Stem (Travel)," NSF, \$191,977 (Jan 2005 - Jun 2008).
- O'Connell, M. A. (Activity Director; Bernstein, Program Director) 07/01/05 to 06/30/09 Medicinal Plants of the Southwest Student Development Activity, NIH NIGMS RISE, ~\$400,000 (direct costs to MPSW activity)
- O'Connell, M. A. (co-PI, collaboration with Iowa State University) 08/01/05 – 07/31/10 Bioinformatics and computational biology graduate training grant, NSF IGERT, ~\$3M total (\$800,000 total to NMSU)
- O'Connell, M. A. (co-PI; Ranjan, PI) 08/01/04 to 07/31/09 "Center for Research Excellence in Bioinformatics and Computational Biology, NSF CREST \$4M
- O'Connell, M. A. (project PI; Kuehn, Program Director) 06/01/04 to 05/31/08 Transcriptional Regulation of Secondary Metabolism, NIH NIGMS SCORE, \$458,136 (direct costs)
- O'Connell, M. A. (Principal), "Functional genomics for plants adapted to arid and semi-arid climates", NMAES/Hatch, \$50,000 (October 1, 2003 – September 30, 2008).