

CURRICULUM VITAE

Carolyn Anne Young

Associate Professor/Molecular Mycologist
Forage Improvement Division
The Samuel Roberts Noble Foundation
Ardmore, Oklahoma 73401

Email: cayoung@noble.org
Phone: +1 580 224 6860
Cellphone: +1 580 340 0280

ACADEMIC QUALIFICATIONS:

PhD Massey University, Palmerston North, New Zealand (2005). Thesis Title: The indole-diterpene gene cluster from the ryegrass endophyte, *Neotyphodium lolii*, is required for the biosynthesis of lolitrem B, a bioprotective alkaloid. Supervisor: Prof Barry Scott.

MSc (Molecular Biology, 1st class Honours), Massey University, Palmerston North, New Zealand (1999). Thesis Title: Paxilline negative mutants of *Penicillium paxilli* generated by heterologous and homologous plasmid integration. Supervisor: Prof Barry Scott.

BSc Massey University, Palmerston North, New Zealand (1993).

NZCS (New Zealand Certificate in Science), Central Institute of Technology, Wellington, New Zealand (1988).

CURRENT POSITIONS:

Associate Professor, Principal Investigator (Molecular Mycologist), Forage Improvement Division, Samuel Roberts Noble Foundation, Ardmore, Oklahoma (October 2012 - present).

Adjunct Associate Professor, Entomology and Plant Pathology, Oklahoma State University (July 2011 – December 2015 as Adjunct Assistant Professor).

Honorary Research Associate, Institute of Molecular BioSciences, Massey University, Palmerston North, New Zealand (January 2012 – present).

PROFESSIONAL POSITIONS HELD:

January 2006 – October 2012. Assistant Professor, Principal Investigator (Molecular Mycologist), Forage Improvement Division, Samuel Roberts Noble Foundation, Ardmore, Oklahoma.

October 2004 – December 2005. Postdoctoral fellow in the lab of Dr Sophien Kamoun, Department of Plant Pathology, OARDC, Ohio State University, USA. Research Topic: Functional genomics of *Phytophthora infestans* effectors of plant disease.

November 2000 – October 2004. Fulltime PhD student.

February 1993 – October 2000. Laboratory Manager, in the lab of Professor Barry Scott, Institute of Molecular BioSciences, Massey University, Palmerston North, New Zealand. Research Topic: Isolation and characterisation of fungal indole-diterpene biosynthesis genes.

July 1987 – April 1992. Research Assistant, in the lab of Professor Barry Scott, Microbiology and Genetics Department, Massey University, Palmerston North, New Zealand. Research Topic: *Mesorhizobium loti* host specific nodulation genes.

February 1985 – July 1987. Technical Assistant, Chemistry and Biochemistry Department, Massey University, Palmerston North, New Zealand.

AWARDS

- ISAT travel award (2008) to establish collaboration between the labs of Carolyn Young (Noble Foundation) and Richard Johnson (AgResearch, New Zealand) awarded NZ\$3,140 for travel to New Zealand September 2009
- PAMGO annotation and Oomycete workshops travel fellowship (\$1000) (2008)
- Phytophthora Workshop Travel Fellowship, NSF Phytophthora Genomics Network (2005)
- Student Presentation Award 22nd Fungal Genetics Conference, Asilomar, USA (2003)
- 11th Queenstown Molecular Biology Meeting poster award, New Zealand (2001)
- New Zealand Foundation of Science and Technology, Bright Future Top Doctoral PhD scholarship (2000)
- NZSBMB poster award, Wellington, New Zealand (2000)
- John Morris Young Scientist Award, Queenstown Molecular Biology Meeting, New Zealand (1998)
- Claude McCarthy Fellowship (1997) to spend 3 months in the lab of Wilhelm Gruissem, in the Plant and Microbial Biology Department, University of California, Berkeley, USA
- Genetics Society Travel Grant to attend the Fungal Genetics Conference, Asilomar, USA (\$550 for each of the following years; 1997, 1999, 2001, 2003)

SYNERGISTIC ACTIVITIES

- Member of Publications Board (American Phytopathological Society) (2016 – present)
- Invited participant for FFAR Phytobiomes convening meeting, Tampa, Florida (July 29-30)
- Chair: Microbiome and Phytobiomes Session II at the Molecular Plant-Microbe Interactions Conference Portland, Oregon (July 17-21, 2016)
- Invited participant for Microbes for Sustainable Agriculture. Asilomar, California (March 2016)
- Participant of Phytobiomes initiative (2015 – present)
- Board member for the Alliance for Grassland Renewal (<http://grasslandrenewal.org/>) (2015 – present)
- Invited participant for ARPA-E Phytosequestration Workshop, Chicago (July 2015)
- Co-Chair of Noble Foundation Plant Microbe Interaction Cluster (2013 – present)
- Chair of the Noble Foundation Tall Fescue Crop Specific Group (2013 – present)
- Member of Noble Foundation Data Management Committee (2013 – Present), Chair for 2015-present
- Coordinated the Noble Foundation Plant Microbe Interactions Symposium (March 2015)

- Coordinated Oklahoma Fungal Genetics Meeting (March 2013).
- Senior Editor for Epichloae, Endophytes of Cool Season Grasses. Published online at <http://www.noble.org/plant-symbionts/isfeg7> conference proceedings for ISFEG7 (2012)
- Co-chair for Symbiosis session for the 7th International Symposium on Molecular Breeding of Forage and Turf (MBFT), June 4-7, 2012, Salt Lake City, Utah.
- Organizer for Clavicipitaceae genomics workshop (March, 2011) and the held at the Samuel Roberts Noble Foundation
- Endophyte expert at the Western Region Choke Management Work Group Meeting. Oregon State University, Corvallis, OR. June 8-9, 2011
- Organization committee member for the International Symposium for Fungal Endophytes of Grasses (ISFEG) Lexington, Kentucky June 2010
- Secretary (2008) and Chairperson (2009) for Southern Extension and Research Activity Information Exchange Group 8 (SERA-IEG8, Fescue Toxicosis Meeting)
- Member of Southern Oklahoma Technology Center Biotechnology Advisory Committee 2008 – present
- Organizer for Epichloë Genomics Workshop (March, 2008) held at the Samuel Roberts Noble Foundation
- Undergraduate and graduate mentoring with topics such as ‘young women in science’ and ‘managing your family and research’
- Host high school interns from Southern Oklahoma Technology Center. Each internship is a minimum of 9 h/week for 1 month
- Host Noble Foundation Summer Scholar students (undergraduate students) for 9-week program
- Convene the Forage Improvement Division Summer Scholar workshop (2007 – 2011)
- Noble Foundation Wellness committee member (2008 – 2011)
- Forage Improvement Division Seminar Co-ordinator (2008-2009)
- Provide hands on lab experience focused on grass endophytes for tour groups to Noble Foundation. Groups include high school, undergraduate and graduate students, and general public
- Committee member for the 8th Queenstown Molecular Biology Meeting (1998)
- Committee member for the ‘Cellular and Molecular Mycology’ mini-symposium at Flock House, Bulls, New Zealand (1997)
- A member of the management committee for the ‘Genome Analysis Service’ Institute of Molecular BioSciences, Massey University (1998-2002)

EDITORIAL BOARD, REVIEWER AND GRANT PANELS

- Editor-in-Chief for Phytobiomes (APS Journal) (2016 – present)
- Associate Editor, Mycologia (2014 – present)
- Peer reviewer, ad hoc (40 Journals): African Journal of Biotechnology, Agronomy Journal, American Journal for Botany, Applied and Environmental Microbiology, Archives of Microbiology, Biological Control, BMC Genomics, BMC Microbiology, Crop and Pasture Science, Crop Science, Ecology, Environmental and Experimental Botany, FEMS Microbiology Ecology, Fungal Biology, Fungal Diversity, Fungal Genetics and Biology, Journal of Agricultural and Food Chemistry, Journal of Animal Science, Journal of Applied Microbiology, Journal of Arid Environments, Journal of Basic Microbiology, Journal of Industrial Microbiology and Biotechnology, Microbiological Research, Molecular Breeding, Molecular Plant-Microbe Interactions, Mycologia, Mycopathologia, New Phytologist,

Phytochemistry, Phytopathology, Plant and Soil, Plant Cell, Plant Disease, Plant Physiology, PLoS Genetics, PLoS One, PLoS Pathogens, Symbiosis, Toxins, Trends in Plant Science.

- Grant Panel member, NIFA-USDA (May 2016)
- Grant Panel member, NIFA-USDA (June 2013)
- Grant Peer reviewer: NSF, National Science Foundation; USDA; WWTF, Wiener Wissenschafts-, Forschungs- und Technologiefonds; AGMARDT, New Zealand

SOCIETY MEMBERSHIP

American Microbiological Society (AMS), American Phytopathological Society (APS), Association for Women in Science (AWIS), Crop Science Society of America (CSSA), Genetics Society of America (GSA), International Society for Molecular Plant-Microbe Interactions (IS-MPMI), Mycological Society American (MSA)

CULTIVARS RELEASED

2010 Texoma MaxQ II

PUBLICATIONS (AND ACCEPTED FOR PUBLICATION)

*Young Lab members, #Corresponding author

1. Rogers JK, Walker N, **Young CA**. (2016) Novel and toxic endophyte effect on nematode populations in summer-dormant and summer-active tall fescue. *Journal of Nematology* 48: 87-94
2. Rudgers JA, Fletcher RA, Olivas E, **Young CA**, Charlton ND*, Pearson D, Maron JL. (2016) Long-term ungulate exclusion reduces fungal symbiont frequency within *Festuca campestris* in native grasslands. *Okios*. 181: 1151-1161. DOI 10.1007/s00442-016-3620-7
3. Saikkonen K, **Young CA**, Helander M, Schardl CL (2016) Endophytic *Epichloë* species and their grass hosts: from evolution to applications. *Plant Molecular Biology*. 90: 665-675. doi:org/10.1007/s11103-015-0399-6
4. **Young CA**^{#†}, Schardl CL[†], Panaccione DG, Florea S, Takach JE*, Charlton ND*, Moore N, Webb J, Jaromczyk J. (2015) Genetics, genomics and evolution of ergot alkaloid diversity. *Toxins*. 7: 1273-1302. doi:103390/toxins7041273 (†equal contribution)
5. Chen L, Wang Y, Li X, Li C¹, Swoboda GA*, **Young CA**¹, Sugawara K, Leuchtmann A, Schardl CL¹. (2015) Two distinct *Epichloë* species symbiotic with *Achnatherum inebrians*, drunken horse grass. *Mycologia*. 107: 845-873. doi:10.3852/15-019 (¹Project leads)
6. Shoji J, Charlton ND*, Yi M*, **Young CA**, Craven KD. (2015) Vegetative hyphal fusion and subsequent nuclear behavior in *Epichloë* grass endophytes. *PLoS One*. 10: e0121875. doi: 10.1371/journal.pone.0121875
7. Berry D, Takach JE*, Schardl CL, Charlton ND*, Scott B, **Young CA**[#]. (2015) Disparate independent genetic events disrupt in certain symbiotic secondary metabolism gene *perA* in *Epichloë* species. *Applied and Environmental Microbiology*. 81: 2797-2807. doi:10.1128/AEM.03721-14
8. Kazenel MR, Debban C, Ranelli L, Hendricks WQ*, Chung AYY, Pendergast T, Charlton ND*, **Young CA**, Rudgers JA. (2015) Fungal symbiosis alters host niche dimensions. *AoB Plants*. doi: 10.1093/aobpla/plv005
9. Talukder SK, Azhaguvel P, Mukherjee S, **Young CA**, Tang Y, Krom N, Saha MC. (2015) De novo assembly and characterization of tall fescue [*Lolium arundinaceum* (Schreb.)

- Darbysh.] transcriptome under water stress. *Plant Genome*. 8: doi:10.3835/plantgenome2014.09.0050
10. Shymanovich T, Saari S, Lovin ME, Jarmusch AK, Musso AM, Charlton ND*, **Young CA**, Cech NB, Faeth SH. (2014) Alkaloid variation among epichloid endophytes of sleepygrass (*Achnatherum robustum*) and consequences for resistance to insect herbivores. *Journal of Chemical Ecology*. doi:10.1007/s10886-014-0534-x
 11. **Young CA**[#], Charlton ND*, Takach JE*, Swoboda GA*, Trammell MA, Huhman DV, Hopkins AA. (2014) Characterization of *Epichloë coenophiala* within the U.S.: are all tall fescue endophytes created equal? *Frontiers in Chemistry, Chemical Biology*. doi: 10.3389/fchem.2014.00095
 12. Rogers JK, **Young CA**, Norton SL, Mosali J, Hopkins AA. (2014) Summer-dormant and summer-active tall fescue stockpiling opportunities in a marginal environment. *Forage and Grazinglands* doi: 10.2134/FG-2014-0065-RS.
 13. Charlton ND*, Craven KD, Afkhami ME, Hall BA*, Ghimire SR, **Young CA**[#]. (2014) Interspecific hybridization and bioactive alkaloid variation increases diversity in endophytic *Epichloë* species of *Bromus laevipes*. *FEMS Microbiology Ecology* 90: 276-289 doi: 10.1111/1574-6941.12393
 14. Beck PA, Stewart CB, Gray HC, Gadberry MS, Gunter S, **Young CA**, and Hopkins AA. (2014). Using Tall Fescue in a Complementary Grazing Program for Spring Calving Beef Cows in Southern Arkansas. *The Professional Animal Scientist* 30: 423-431
 15. Arif M, Dobhal S, Garrido PA, Orquera GK, Espindola AS, **Young CA**, Ochoa-Corona FM, Marek SM, Garzon CD. (2014) Highly sensitive end-point PCR and SYBR green qPCR detection of *Phymatotrichopsis omnivora*, causal fungus of cotton root rot. *Plant disease*. 98:1205-1212 doi.org/10.1094/PDIS-05-13-0505-RE
 16. Pan J, Bhardwaj M, Faulkner JR, Nagabhyru P, Charlton ND*, Higashi RM, Miller A-F, **Young CA**, Grossman RB, Schardl CL. (2014) Ether bridge formation in loline alkaloid biosynthesis. *Phytochemistry* 98: 60-68.
 17. Takach JE* and **Young CA**[#]. (2014) Alkaloid genotype diversity of tall fescue endophytes. *Crop Science* 54: 667-678. doi: 10.2135/cropsci2013.06.0423
 18. Scott B, **Young CA**, Saikia S, McMillan LK, Monahan BJ, Bryant A, Astin J, Eaton CJ, Finch SC, Tapper BA, Koulmann A, Wrenn RE, Parker EJ, Jameson GB. (2013) Deletion and gene expression analyses define the paxilline biosynthetic gene cluster in *Penicillium paxilli*. *Toxins* 5: 1422-1446; doi:10.3390/toxins5081422
 19. Schardl CL, **Young CA**, Pan J, Florea S, Takach JE*, Panaccione DG, Farman ML, Webb JS, Jaromczyk J, Charlton ND*, Nagabhyru P, Chen L, Shi C, Leuchtman A. (2013) Currencies of mutualisms: Sources of alkaloid genes in vertically transmitted epichloae. *Toxins* 5: 1064-1088
 20. Schardl CL, **Young CA**, Hesse U, Amyotte SG, Andreeva K, Calie PJ, Fleetwood DJ, Haws DC, Moore N, Oeser B, Panaccione DG, Schweri KK, Voisey CR, Farman ML, Jaromczyk JW, Roe BA, O'Sullivan DM, Scott B, Tudzynski P, An Z, Arnaoudova EG, Bullock CT, Charlton ND*, Chen L, Cox M, Dinkins RD, Florea S, Glenn AE, Gordon A, Guldener U, Harris DR, Hollin W, Jaromczyk J, Johnson RD, Khan AK, Leistner E, Leuchtman A, Li C, Liu JG, Liu J, Liu M, Mace W, Machado C, Nagabhyru P, Pan J, Schmid J, Sugawara K, Steiner U, Takach JE*, Tanaka E, Webb JS, Wilson EV, Wiseman JL, Yoshida R, and Zeng Z. (2013) Plant-symbiotic fungi as chemical engineers: Multi-genome analysis of the Clavicipitaceae reveals dynamics of alkaloid loci. *PLoS Genetics* 9: e1003323 doi:10.1371/journal.pgen.1003323

21. **Young CA**, Hume DE, McCulley R. (2013) Fungal endophytes of tall fescue and perennial ryegrass: pasture friend or foe? *Journal of Animal Science*. 91: 2379-2394. doi:10.2527/jas.2012-5951
22. Parish JA, Parish JR, Best TF, Boland HT, and **Young CA**. (2013) Effects of selected endophyte and tall fescue cultivar combinations on steer grazing performance, indicators of fescue toxicosis, feedlot performance, and carcass traits. *Journal of Animal Science*. 91: 342-355. doi:10.2527/jas.2011-4725
23. Takach JE*, Mittal S*, Swoboda GA*, Bright SK, Trammell MA, Hopkins AA, **Young CA**[#] (2012) Genotypic and chemotypic diversity of *Neotyphodium* endophytes in tall fescue from Greece. *Applied and Environmental Microbiology* 78: 5501-5510. doi: 10.1128/AEM.01084-12
24. Charlton ND*, Craven KD, Mittal S*, Hopkins AA, **Young CA**[#] (2012) Characterization of *Epichloë canadensis*: A new interspecific epichloid hybrid symbiotic with Canada wildrye (*Elymus canadensis*). *Mycologia* 104:1187-1199
25. Singh R*, Interrante S, Butler T, **Young CA**[#]. (2012) Characterization and effectiveness of co-inoculation of *Sinorhizobia* strains on annual medics. *Crop Science* 52:932-942
26. Dierking RM, **Young CA**, Kallenbach RL (2012) Mediterranean and Continental Tall Fescue: I. Effects of Endophyte Status on Leaf Extension, Proline, Mono- and Disaccharides, Fructan, and Freezing Survivability. *Crop Science* 52:1-9.
27. Iannone LJ, Novas MV, **Young C**, De Battista J, Schardl CL. (2012) Endophytes of native grasses from South-America. *Biodiversity and ecology. Fungal Ecology*. 5: 357-363
28. Schardl CL, **Young CA**, Faulkner J, Florea S, Pan J. (2012) Chemotypic diversity of epichloae, fungal symbionts of grasses. *Fungal Ecology*. 5: 331-344
29. Fleetwood D, Khan A, Johnson RJ, **Young CA**, Mittal S*, Wrenn R, Hesse U, Foster S, Schardl CL, Scott DB (2011). Abundant degenerate miniature inverted-repeat transposable elements in genomes of epichloë fungal endophytes of grasses. *Genome Biology and Evolution* 3:1253-1264
30. Interrante S, Singh R*, Islam AM, Stein J, **Young CA**, Butler T. (2011) Effectiveness of *Sinorhizobium* inoculants on annual medics. *Crop Science*. 51:2249-2255.
31. Ghimire SR, Rudgers JA, Charlton ND, **Young C**, Craven KD. (2011) Prevalence of an intra-specific *Neotyphodium* hybrid in natural populations of Stout Wood Reed (*Cinna arundinacea* L.) from eastern North America. *Mycologia*. 103: 75-84. DOI: 10.3852/10-154
32. Hopkins AA, **Young CA**, Butler TJ and Bouton JH. (2011). Registration of Texoma MaxQ II tall fescue. *Journal of Plant Registration*. 5:14-18.
33. Uppalapati S, **Young C**, Marek S, Mysore K. (2010) *Phymatotrichum* (cotton) root rot caused by *Phymatotrichopsis omnivora*: Retrospects and Prospects. *Molecular Plant Pathology*. 11:7-17.
34. Hopkins AA, **Young CA**, Simpson WR, Panaccione DG, Mittal S*, and Bouton JH. (2010). Agronomic performance and lamb safety of tall fescue novel endophyte combinations in the south central USA. *Crop Science* 50: 1552-1561.
35. Oh S-K, **Young C**, Lee M, Oliva R, Bozkurt T, Cano LM, Win J, Bos J, Liu H-Y, van Damme M, Morgan W, Choi D, Van der Vossen EAG, Vleeshouwers VGAA, and Kamoun S. (2009). In planta expression screens of *Phytophthora infestans* RXLR effectors reveal diverse phenotypes, including activation of the *Solanum bulbocastanum* disease resistance protein Rpi-blb2. *Plant cell* 21: 2928-2947.
36. Haas BJ, Kamoun S, Zody MC, Jiang RHY, Handsaker RE, Cano LM, Grabherr M, Kodira CD, Raffaele S, Torto-Alalibo T, Bozkurt TO, Ah-Fong AMV, Alvarado L, Anderson VL, Armstrong MR, Avrova A, Baxter L, Beynon J, Boevink PC, Bollmann SR, Bos JIB, Broad Institute Genome Sequencing Platform, Bulone V, Cai G, Cakir C, Carrington JC, Chawner

- M, Conti L, Costanzo S, Ewan R, Fahlgren N, Fugelstad J, Gilroy EM, Gnerre S, Green PJ, Grenville-Briggs LJ, Griffith J, Grünwald NJ, Horn K, Horner NR, Hu C, Huitema E, Jeong D, Jones AME, Jones JDG, Jones RW, Karlsson EK, Kunjeti SG, Lamour K, Liu Z, Ma L, MacLean D, Marcus C, McDonald H, McWalters J, Meijer HJG, Morgan W, Morris PF, Munro CA, O'Neill K, Ospina-Giraldo M, Pinzón A, Pritchard L, Ramsahoye B, Ren Q, Restrepo S, Roy S, Sadanandom A, Savidor A, Schornack S, Schwartz DC, Schumann UD, Schwessinger B, Seyer L, Sharpe T, Silvar C, Song J, Studholme DJ, Sykes S, van de Vondervoort PJI, Vipaporn P, Wawra S, Weide R, Win J, **Young C**, Zhou S, Fry W, Meyers BC, van West P, Ristaino J, Govers F, Birch PRJ, Whisson SC, Judelson HS, Nusbaum C. (2009). Genome sequence and comparative analysis of the Irish potato famine pathogen *Phytophthora infestans*. *Nature* 461:393-398.
37. **Young CA**[#], Tapper BA, May K, Moon CA, Schardl CL, Scott B. (2009). Indole-diterpene biosynthetic capability of epichloë endophytes as predicted by *ltm* gene analysis. *Applied and Environmental Microbiology* 75:2200-2211.
 38. Saha M, **Young C**, Hopkins AA. (2009). Genetic variation within and among wildrye (*Elymus canadensis* and *E. virginicus*) populations from the southern Great Plains. *Crop Science* 49:913-922.
 39. Vleeshouwers VGAA, Rietman H, Krenek P, Champouret N, **Young C**, Oh S-K, Wang M, Bouwmeester K, Vosman B, Visser RGF, Jacobsen E, Govers F, Kamoun S, Van der Vossen EAG. (2008). Effector genomics accelerates discovery and functional profiling of potato disease resistance and *Phytophthora infestans* avirulence genes. *PLoS ONE* 3:e2875.
 40. Hahn H, McManus MT, Warnstorff K, Monahan BJ, **Young CA**, Davies E, Tapper BA, Scott B. (2008). *Neotyphodium* mutualistic fungal endophytes confer physiological protection to perennial ryegrass (*Lolium perenne* L.) subjected to a water deficit. *Environmental and Experimental Botany* 63:183-199.
 41. Saikia S, Nicholson MJ, **Young CA**, Parker EJ, Scott B (2008). The genetic basis for indole-diterpene chemical diversity in filamentous fungi. *Mycological Research* 112:184-199.
 42. **Young CA**, Felitti S, Shields K, Spangenberg G, Johnson RD, Bryan GT, Saikia S, Scott B, (2006). A complex gene cluster for indole-diterpene biosynthesis in the endophyte *Neotyphodium lolii*. *Fungal Genetics and Biology* 43: 679-93.
 43. Bos J, Kanneganti T-D, **Young C**, Cakir C, Huitema E, Win J, Armstrong M, Birch P, Kamoun S (2006). The C-terminal half of *Phytophthora infestans* RXLR effector AVR3a is sufficient to trigger R3a-mediated hypersensitivity and suppress INF1-induced cell death in *Nicotiana benthamiana*. *The Plant Journal*, 48: 165-76.
 44. Bhattacharjee S, Hiller NL, Liolios K, Win J, Kanneganti T-D, **Young C**, Kamoun S, Haldar K, (2006). The malarial host-targeting signal is conserved in the Irish potato famine pathogen. *PLoS Pathogens* 2:e50 (DOI: 10.1371/journal.pp.0020050).
 45. Bradshaw RE, Jin H, Morgan BS, Schwelm A, Teddy OR, **Young CA**, Zhang S, (2006). A polyketide synthase gene required for biosynthesis of the aflatoxin-like toxin, dothistromin. *Mycopathologia*, 161: 283-294.
 46. Damrongkool P, Sedlock AB, **Young CA**, Johnson RD, Goetz KE, Scott B, Schardl CL, Panaccione DG, (2005). Structural analysis of a peptide synthetase gene required for ergopeptide production in the endophytic fungus *Neotyphodium lolii*. *DNA Sequence*, 16:379-385.
 47. **Young CA**, Bryant MK, Christensen MJ, Tapper BA, Bryan GT, Scott B, (2005). Molecular cloning and genetic analysis of a symbiosis-expressed gene cluster for lolitrem biosynthesis from a mutualistic endophyte of perennial ryegrass. *Mol Gen Genomics*, 274:13-29.

48. McMillan L, Carr RL, **Young C**, Astin JW, Lowe RGT, Parker EJ, Jameson GB, Finch SC, Miles CO, McManus OB, Schmalhofer WA, Garcia ML, Kaczorowski GJ, Goetz M, Tkacz JS, Scott B (2003). Molecular analysis of two cytochrome P450 monooxygenase genes required for paxilline biosynthesis in *Penicillium paxilli*, and effects of paxilline intermediates on mammalian maxi-K ion channels. *Mol Gen Genomics*, 270: 9-23.
49. Panaccione DG, Johnson RD, Wang J, **Young CA**, Damrongkool P, Scott B, Schardl CL (2001). Elimination of ergovaline from a grass-*Neotyphodium* endophyte symbiosis by genetic modification of the endophyte. *Proc. Natl. Acad. Sci. (USA)* 98: 12820-12825.
50. **Young C**, McMillan L, Telfer E, Scott B (2001). Molecular cloning and genetic analysis of an indole-diterpene gene cluster from *Penicillium paxilli*. *Molecular Microbiology* 39(3): 754-764.
51. Yalovsky S, Kulukian A, Rodriguez-Concepcion M, **Young CA**, Grissem W (2000). Functional requirement of plant farnesyltransferase during development in Arabidopsis. *Plant Cell* 12(8): 1267-78
52. **Young C**, Itoh Y, Johnson R, Garthwaite I, Miles CO, Munday-Finch SC, Scott B (1998). Paxilline-negative mutants of *Penicillium paxilli* generated by heterologous and homologous plasmid integration. *Current Genetics* 33: 368-377.
53. Scott DB, **Young CA**, Collins-Emerson JM, Terzaghi EA, Rockman ES, Lewis PE, Ronson CE (1996). Novel and complex chromosomal arrangement of *Rhizobium loti* nodulation genes. *Mol. Plant-Micro. Interact.* 9: 187-197.
54. Stange RR, Jeffares D, **Young CA**, Scott DB, Eason JR, Jameson PE (1996). PCR amplification of the *fas-1* gene for the detection of virulent strains of *Rhodococcus fascians*. *Plant Pathology* 45: 407-417.
55. Hancock KR, Rockman E, **Young CA**, Pearce L, Maddox IS, Scott DB (1991). Expression and nucleotide sequence of the *Clostridium acetobutylicum* β -galactosidase gene cloned in *Escherichia coli*. *Journal of Bacteriology* 173: 3084-3095.
56. **Young CA**, Collins-Emerson JM, Terzaghi EA, Scott DB (1990). Nucleotide sequence of *Rhizobium loti nodI*. *Nuc. Acids Res.* 10: 6691.

EDITOR

1. In: **Young CA**, Aiken GE, McCulley, RL, Strickland JR, and Schardl CL, (eds). 2012. *Epichloae, endophytes of cool season grasses: Implications, utilization and biology*. ISBN: 978-0-9754303-6-1

BOOK CHAPTERS

1. **Young CA**[#], Uppalapati SR, Mysore KS, Marek SM, (2015). Phymatotrichopsis Root Rot. In Rhodes, Lamp, Samac (eds) *Compendium for Alfalfa diseases and Pests* (3rd edition). APS Press. pp 44 – 46
2. Schardl CL, **Young CA**, Moore N, Krom ND*, DuPont P-Y, Pan J, Florea S, Webb JS, Jaromczyk J, Jaromczyk JW, Cox MP and Farman ML. (2014) *Genomes of Plant-Associated Clavicipitaceae*. In: Martin F. (ed) *Advances in Botanical Research*. Elsevier Ltd. Volume 70 Pp. 291-327.
3. Schardl CL, Chen L, **Young CA**. (2014) Fungal endophytes of grasses and morning glories, and their bioprotective alkaloids. In: Osbourn A, Goss RJ (eds), *Natural Products: Discourse, Diversity and Design* (1st edition) John Wiley & Sons, Inc. Pp 125-145.

4. Johnson RD, Akagi Y, Fleetwood DJ, Gardiner DM, Kodama M, **Young CA** and Voisey CR (2013). Fungal toxins of agricultural importance. In: Kempken F. (ed), *Agricultural Applications* (2nd edition). The Mycota XI. Springer-Verlag Berlin Heidelberg. Pp 75-113.
5. **Young CA**, Wilkinson HH, (2010). Epichloë endophytes: models of an ecological strategy. In Borkovich K, Ebbole D, (eds). *Cellular and Molecular Biology of Filamentous Fungi*. Chapter 41 pp.660 – 675.
6. Scott B, Wren RE, May KJ, Takemoto D, **Young CA**, Tanaka A, Fleetwood DJ, Johnson RD, (2009). Regulation and functional analysis of bioprotective metabolite genes from the grass symbiont *Epichloë festucae*. In: U. Gisi et al. (eds.), *Recent Developments in Management of Plant Diseases, Plant Pathology in the 21st Century*, DOI 10.1007/978-1-4020-8804-9_15. Springer, Netherlands
7. Morgan W, Bos J, Bruce C, Lee M, Liu H-Y, Oh S-K, Song J, Win J, **Young C**, Kamoun K (2008). Structure and function of RXLR effectors of plant pathogenic oomycetes. In: JC Gustafson (ed), *Genomics of Disease*. Springer Science+Business Media, LLC.
8. Scott B, **Young, CA**, Tanaka A, Parker EJ, (2007). Molecular and genetic analysis of symbiosis expressed secondary metabolite genes from the mutualistic fungal endophytes *Neotyphodium lolii* and *Epichloë festucae*. In Gadd, G. (Ed). *Exploitation of Fungi*. Cambridge University Press, Cambridge, UK. pp. 59-77.
9. Scott B, **Young C**, Tanaka A, Christensen M, Tapper B, Bryan G (2005). Molecular and genetic analysis of lolitrem and peramine biosynthetic pathways in *Epichloë festucae*. In: Roberts CA, West CP, and Spiers DE (eds). *Neotyphodium in cool-season grasses*. Blackwell publishing, Iowa, pp. 93-102.
10. Scott B, **Young C** (2003). Genetic manipulation of Clavicipitalean endophytes. In: White JF Jr, Bacon CW, Hywel-Jones NL, and Spatafora JW (eds). *Clavicipitalean fungi evolutionary biology, chemistry, biocontrol, and cultural impacts*. Marcel Dekker, Inc. New York, pp. 399-324
11. Scott DB, Itoh Y, Johnson RD, Collett M, **Young CA** (1994). Genetic dissection of the paxilline and lolitrem indole diterpenoid biosynthetic pathway in *Acremonium* endophytes and *Penicillium* spp. pp 207-215 in *Host specific toxin. Biosynthesis, receptor and molecular biology*, Tottori University Press, Tottori City, Japan.
12. Scott DB, MacDonald P, **Young CA**, Pankhurst C (1988). *Rhizobium loti* host specific nodulation genes. In *Molecular Genetics of Plant-Microbe Interaction 1988*, pp 105-106. (Palacios, R. and Verma, D-P.S. eds) APS Press St. Paul, Minnesota, USA.

CONFERENCE PROCEEDINGS (# SOME REVIEWED)

1. **Young**[#], Takach*, Mittal*, Andreeva, Florea, Schardl. (2012). Alkaloid diversity across the epichloae: It's all in the genes. In: Young CA, Aiken GE, McCulley, RL, Strickland JR, and Schardl CL, (eds). *Epichloae, endophytes of cool season grasses: Implications, utilization and biology*. ISBN: 978-0-9754303-6-1
2. Schardl, Moore, Zhao, Arnaoudova, Bullock, Dai, Harris, Jaromczyk, Khan, Liu, Robinson, Schmid, Webb, Wiseman, Zeng, Farman, Hesse, Jaromczyk, Liu, Roe, Scott, **Young**. (2012). Genome sequence of *Epichloë festucae*. In: Young CA, Aiken GE, McCulley RL, Strickland JR, and Schardl CL, (eds). *Epichloae, endophytes of cool season grasses: Implications, utilization and biology*. ISBN: 978-0-9754303-6-1
3. #Khan, **Young**, Zhao, Voisey, Fleetwood, Hesse, Schardl, Johnson. (2012). The pathogen and the mutualist: what makes friend or foe? In: Young CA, Aiken GE, McCulley RL, Strickland JR, and Schardl CL, (eds). *Epichloae, endophytes of cool season grasses: Implications, utilization and biology*. ISBN: 978-0-9754303-6-1

4. Evers GW, Smith GR, Parsons MJ, Singh R* and **Young CA**. (2010). Searching for more effective rhizobia strains for ball and rose clovers. For American Forage and Grassland Council (AFGC), Springfield MO. June 21-23, 2010.
5. **Young CA**, Mittal S*, and Takach JE*. (2010). Chemical diversity of bioprotective alkaloids of endophytic fungi in cool season grasses. For International Herbage Seed Conference. Dallas, TX.
6. #Burr K*, Mittal S*, Hopkins A, **Young C** (2007). Characterisation of fungal endophytes present in *Elymus canadensis* (Canada wildrye). In: Popay AJ and Thom ER (eds). Proceedings of the 6th International Symposium on Fungal Endophytes of Grasses. Grassland Research and Practice series No. 13. New Zealand Grassland Association, pp 473-476.
7. #Scott B, Takemoto D, Tanaka A, **Young CA**, Bryant MK, May KJ. (2007). Functional analysis of the *Epichloë festucae*-perennial ryegrass symbiosis. pp. 433-441. In: Popay AJ and Thom ER (eds). Proceedings of the 6th International Symposium on Fungal Endophytes of Grasses. Grassland Research and Practice series No. 13. New Zealand Grassland Association
8. Scott B, **Young C**, McMillan L (1999). Molecular biology of *Epichloë* toxin biosynthesis. In: Woodfield D, and Easton S (eds). Ryegrass-endophyte: an essential New Zealand symbiosis. Proceedings of the New Zealand Grasslands Association, pp 77-83.

PATENTS

1. **Young C.**, Hopkins A., (2011). Fungal endophytes of *Elymus canadensis*. Full specification for United States letters patent. Patent number US 7,892,813 B2 and WO Patent 2,008,100,892
2. Scott, B., **Young, C.**, Parker, E.J., Johnson, R., Tapper, B.A., and Bryan, G., (2004). Full specification NZ530331 – Indole diterpene biosynthesis. WO Patent 2,005,061,699 and EP Patent 1,709,164

EXTENSION ARTICLES

1. Pirelli GJ, Anderson NP, Craig AM, **Young CA** (2016). Endophyte toxins in grass and other feed sources. Risks to livestock. EM 8598. Oregon State University.
2. **Young CA**, Rogers JK (2016). Alliance offers one day tall fescue renovation schools. Ag News and Views 34:3
3. Rogers JK, **Young CA** (2014). Alliance provides seed quality control. Ag News and Views 32:12
4. **Young CA**, Rogers JK, Baughman T (2014). Cotton root rot inhibits alfalfa stand longevity. Ag News and Views 32:7
5. **Young C.** (2010). Cool-season grasses and their fungal companions. Ag News and Views 28:4

GRANTS

Funded:

- PI: Rebecca McCulley (UKY), Co-PIs Jennifer White (UKY), **Carolyn Young** (Noble). USDA-NIFA funded \$49,736 (Jan 2016-Dec 2017) for “Can Manipulation of fungal endophyte diversity positively influence tall fescue pasture sustainability and ecosystem functioning?” Subaward to Young \$49,164

- PI: **Carolyn Young**. OCAST (Oklahoma Center for the Advancement of Science and Technology) funded \$90,000 (March 2010-2012) for “Deciphering Neotyphodium-grass association with laser capture microscopy”

ORAL PRESENTATIONS (*Invited talks)

2016

- Hybrids, hybrids everywhere, a challenge will be naming them! ECFG13 Clavicipitaceae workshop, Paris, (2 April)
- *Understanding the spatial-temporal dynamics of a root rot disease: a bird’s-eye view to molecular techniques. Molecular Plant-Microbe Interactions conference, Portland, OR (17-21 July)
- *Keynote speaker. It's the little things that matter: microbes that impact forage production. 9th International Symposium on Molecular Breeding of Forage and Turf, Lanzhou, China (15-19 August).
- It's the little things that matter: microbes that impact forage production. Microbiome/metagenome workshop, Noble Foundation (29 September)
- The good and bad of endophytes for forage grasses. Microbiome meeting, Noble Foundation (7-8 October)
- *It's the little things that matter: microbes that impact forage production. Department of Plant Pathology and Microbiology, Texas A&M (26 October)
- *It's the little things that matter: microbes that impact forage production. Division of Plant and Soil Sciences, West Virginia University (17 November)

2015

- *Understanding tall fescue endophytes through genotypic and chemotypic diversity. Plant and Animal Genome Meeting, San Diego, CA (10-14 January)
- *Understanding beneficial and pathogenic microorganisms impacting production of forage crops. Plant and Animal Genome Meeting, San Diego, CA (10-14 January)
- *Understanding beneficial and pathogenic microorganisms that can impact production of forage crops. Phytobiomes meeting. Washington DC, (30 June – 2 July)
- *Understanding tall fescue endophytes through genotypic and chemotypic diversity. International Symbiosis meeting. Lisbon, Portugal (July)
- *Invited Keynote speaker. Fungi impacting forage production: fungal friend and fungal foe. Australian Plant Pathology Congress, Fremantle, Western Australia (14-16 September)
- *Invited Keynote speaker. Genome sequences reveal the dynamic alkaloid loci of *Epichloë* species. The 9th International Symposium on Fungal Endophytes of Grasses and the 1st International Symposium on Plant Microbiomes. Melbourne, Australia (28 September – 2 October).
- *Invited keynote speaker. The complexities of breeding with endophytes. The 5th International Symposium on Forage Breeding. Buenos Aires, Argentina, (19 – 21 October)
- *Fungi impacting forage production: fungal friend and fungal foe. Entomology and Plant Pathology Department, Oklahoma State University (2 December)
- *Microorganisms impacting production of forage crops. Connecting Phytobiomes with Soil and Plant health symposium. ASA meeting, Minneapolis, MN (17 November)

2014

- *Endophyte utilization and discovery: *Epichloë* species for the southern Great Plains. University of Buenos Aires (18 March)
- Discovery, diversity and utilization of *Epichloë* species: Endophytes in native and forage grasses. IMC10, Bangkok, Thailand (3-8 August)
- *Endophyte utilization and discovery: *Epichloë* species for the southern Great Plains. Department of Plant Pathology, University of Kentucky, Lexington, Kentucky (19-22 March)
- *Forage 365: Fungi influencing year-round grazing for the Southern Great Plains. Stromlo Meeting, ANU, Canberra, Australia (2-3 December)

2013

- Exploring endophyte diversity across the Pooideae. APS, Austin (11-14 August).
- *Chemical diversity of bioactive alkaloids produced by endophytes of cool season grasses. ACS, Norman (17 October).
- *Genotypic and chemotypic diversity of epichloid endophytes. Nanjing Agricultural University, Nanjing, China, (19 November)
- *Basic science helping agriculture: Grass breeding with endophytes. Nanjing Agricultural University, Nanjing, China, (19 November)
- *Basic science helping agriculture: Grass breeding with endophytes. Targeted towards undergraduate students. Nanjing Agricultural University, Nanjing, China, (21 November)

2012

- *Genotypic and chemotypic diversity of epichloid endophytes. MBFT, Salt Lake City, UT (June 3-6, 2012)
- *Fungal Endophytes: Forage Friend or Foe. ADSA-AMPA-ASAS-CSAS-WSASAS Joint Annual Meeting, Phoenix, Arizona (July 15-18, 2012)
- *Genotypic and chemotypic diversity of epichloid endophytes. 8th International symposium of Fungal Endophytes of Grasses. Lanzhou, China (August 13-16, 2012)
- *Kiwaniis club luncheon, Ardmore, OK. (October 30, 2012)

2011

- Deconvoluting the *Neotyphodium coenophialum* genome. Fungal Genetics Conference, Asilomar, California (March 15-20, 2011)
- *Advances with grass fungal endophytes in agriculture. Entomology and Plant Pathology Department, Oklahoma State University (April 27, 2011)
- *Advances with grass fungal endophytes in agriculture. Division of Plant Sciences, University of Missouri (August 31, 2011)

2010

- *Fabulous Fungi: not all rottin'. Science and perspectives. A talk targeted to the general public on the wonders of fungi. Convention Center, Ardmore, OK (April 8, 2010)
- *Fungal endophytes of cool season grasses and their associated secondary metabolites. International Herbage Seed conference, Dallas, TX (April 11-14, 2010)
- *Alkaloid diversity across the epichloae: It's all in the genes. International Symposium of Fungal Endophytes of Grasses, Lexington, KY (June 28 – July 1, 2010)
- Panelist for 2010 Creativity World Forum, Oklahoma City, OK (November 15-17, 2010)

2009

- *Lolitrein B biosynthetic capability of epichloë endophytes as predicted by *ltm* gene marker analysis. Plant and animal genome conference, San Diego (January 10-14, 2009)
- *A genomic survey of transporters and their expression in a grass-endophyte symbiosis reveals putative key genes in the nutritional cross talk. Plant and animal genome conference, San Diego (January 10-14, 2009)
- *Bioprotective secondary metabolites from fungal endophytes of cool season grasses. American Plant Pathology Society conference, Portland Oregon, (August 1-5, 2009)
- *Epichloë* endophytes from cool season grass germplasm. American Plant Pathology Society conference, Portland Oregon, (August 1-5, 2009)
- *Chemical diversity of bioprotective alkaloids in epichloë endophytes of cool season grasses. American Chemical Society conference, Washington DC (August 16-20, 2009)
- *Utilizing endophytes in the Southern Great Plains. Plant Genes, Genomes and Genomics, Queenstown Molecular Biology Conference, Queenstown, New Zealand (August 30 – September 1, 2009)
- Utilizing endophytes in the Southern Great Plains. AgResearch, Palmerston North, New Zealand. (September 15, 2009)

2008

- Epichloë endophytes of cool season grasses. The Sainsbury Laboratory, Norwich, England (April 4, 2008)
- *Epichloë endophytes of cool season grasses. Institute for Genetics of Biotechnology, Aarhus University, Slagelse (April 10, 2008)
- *Gene clusters for Bioprotective Secondary Metabolites from Endophytes of Cool Season Grasses. The Niels Bohr Lecture series. Department of Plant Biology, University of Copenhagen, Denmark (April 11, 2008)
- Medicago interactions with cotton root rot. NAAIC meeting, Dallas TX (June 1-4, 2008)
- *The Good, the Bad and the Ugly: Epichloë endophytes, Toxic Alkaloids and Cotton Root Rot. Department of Plant Pathology, Texas A&M (September 10, 2008)
- *Gene clusters for bioprotective fungal secondary metabolites from endophytes of cool season grasses. Department of Plant Pathology, Kansas State University, Manhattan (November 13, 2008)
- *The Good, the Bad and the Ugly: Epichloë endophytes, Toxic Alkaloids and Cotton Root Rot. Texas Tech (December 18, 2008)

2007

- *Gene clusters for bioprotective fungal secondary metabolites from endophytes of cool season grasses. Entomology and Plant Pathology Department, Oklahoma State University (January 17, 2007)
- *The Good, the Bad, and the Ugly in Molecular Mycology: Endophytes, toxic alkaloids and alfalfa root rot. Crop and Soil Sciences, Penn State University (February 9, 2007)
- *The Good, the Bad, and the Ugly in Molecular Mycology: Endophytes, toxic alkaloids and alfalfa root rot. Plant Pathology, University of Minnesota (February 19, 2007)

- Overview of Forage Improvement and Noble Foundation. Plant Pathology department, University of Kentucky (May 21, 2007)
- Characterization of a fungal endophyte present in *Elymus canadensis* (Canada wildrye). American Phytopathological Society meeting, San Diego, CA (July 31, 2007)
- *Gene clusters for bioprotective secondary metabolites from endophytes of cool season grasses. Hope College, Holland, MI (September 14, 2007)

2006

- An integrated approach to cotton root rot disease of alfalfa. NAAIC, St Paul, MN (July 16-19, 2006)
- Utilizing biosynthetic gene clusters for fungal secondary metabolites from endophytes of cool season grasses. Plant Pathology Department, University of Wisconsin, Madison, WI. (October 17, 2006)

SUPERVISION

Postdoctoral Fellows

Postdoctoral Fellows	Duration	Current Position
Ranamalie Amarasinghe	Dec 2006 – Feb 2011	ANU, Australia
Bharat Joshi	Feb 2007 – Sept 2008	India
Hee-Kyung Lee	Jan 2006 – Dec 2006	Research Associate, Noble
Johanna Takach	Oct 2009 – Jun 2013	Luminex Corp., Austin Tx
Mihwa Yi	Nov 2013 – present	Current
Chakradhar Muttapalli	Feb 2015 – present	Current

PhD/Graduate Students

Daniel Berry	Jan 2012 – Jun 2016	Massey University, NZ
Tatsiana Shymanovich	Jun 2013 – Mar 2016	UNC Greensboro, NC
Mary Gard	Jan 2015 – present	OSU, OK
Nathalia Graf-Grachet	Jan 2016 - present	OSU, OK

Summer Interns/Intern

(*Noble Summer Scholars)

Summer Interns/Intern	Year	Originating University or intern
*Kirsti Burr	2006	Brigham Young University, UT
*Stacey Schaefer	2007	Emory University, GA
*Mason Kearns	2008	Brigham Young University, UT
Sarah Mays	2009	SOTC intern
*Jennifer Meoni	2010	North Carolina State University
Breanna Baker	2010	SOTC intern
Heidi Rivera	2010	SOTC intern
Molly Redding	2010	SOTC intern
Delicia Stephenson-King	2010	Big Five intern
*Hayley Schebor	2011	Michigan State University, MI
Laura Nelson	2011	SOTC intern
Simon Abel	2011	Lincoln University, New Zealand
Hattie Clark	2012	SOTC intern
Nicole Farless	2012	Noble Ag intern
Bradley Hall	2013	Oklahoma State University, OK

Kaitlyn Eldridge	2013	SOTC intern
Mary Latimer	2013	SOTC intern
Will Hendricks	2013-2014	University of Michigan, MI
Julie Light	2014	SOTC intern
Lacey Gee	2014	SOTC intern
Ellen Hume	2014	Canterbury, New Zealand
*Joshua Kaste	2014	Cornell, NY
Erika Smith	2015	SOTC intern
Taylor Mueller	2016	SOTC intern
Gloria Desanker	2016	Michigan State University
*Tara Watkins	2016	Western Kentucky University

SCIENTIFIC VISITORS TO THE LAB

- Ian Moncrief (MS student with Steve Marek, Oklahoma State University). July 16-18, 2007. Purpose of visit: Training for isolation of *P. omnivora* protoplasts.
- Alisa Persons (Research associate with Reed Barker, Oregon State University). January 20-26, 2008. Purpose of visit: Training with high throughput DNA extraction, PCR and working with endophytes.
- Kalina Andreeva (Postdoc with Christopher Schardl, University of Kentucky). March 10-14, 2008. Purpose of visit: Training with endophyte protoplast preparation and digestion for long-range mapping.
- Simone Macmil (PhD student with Bruce Roe, University of Oklahoma). August 20-22, 2008. Purpose of visit: Training for isolation of *P. omnivora* protoplasts and chromosome separations for sequencing individual chromosome
- Shetty Halday (Scientist, Aarhus University, Denmark). December 1-20, 2008. Purpose of visit: Training with real-time PCR and alkaloid gene profiling.
- Richard Johnson (Scientist, AgResearch New Zealand). March 2-13, 2009. Purpose of visit: Establishing collaborations in endophyte genomics as part of ISAT funding.
- Murray Cox (Senior Lecturer, Massey University). July 5-12, 2011. Purpose of visit: RNAseq analysis, methods for dissecting expression analysis in hybrid species.
- Kim Thorsted (Research Associate, USDA-ARS, Logan, Utah). July 9-13, 2012. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Li Chen (PhD student – supervisor Christopher Schardl, University of Kentucky and Lanzhou University). September 9-14, 2012. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Tatsiana Shymanovich (PhD student – supervisor Stanley Faeth, University of North Carolina, Greensboro). January 6-11, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes by screening the *Poa alsodes* collection.
- Juan Pan (PhD student – supervisor Christopher Schardl, University of Kentucky). January 9-11, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Will Hendricks (undergraduate at University of Michigan). January 17-20, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Luciana Ranelli (undergraduate at University of Minnesota, Morris). January 17-20, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Tom Miller (assistant professor, Rice University, Houston). January 27-30, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.
- Michelle Sneek (PhD student – supervisor Tom Miller, Rice University). January 27-30, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.

Scott Meadows (research associate – supervisor Tom Miller, Rice University). January 27-30, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.

Craig Roberts (Professor, University of Missouri). February 4-8, 2013. Purpose of visit: NIRS project.

Daniel Berry (PhD student – supervisor Barry Scott, Massey University, New Zealand). March 17-14 April. Purpose of visit: Gaining experience with molecular tools for endophytes and preparation of *perA* paper.

Tatsiana Shymanovich (PhD student – supervisor Stanley Faeth, University of North Carolina, Greensboro). May 6-17, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.

Craig Roberts (Professor, University of Missouri). May 21-24, 2013. Purpose of visit: NIRS project.

Tatsiana Shymanovich (PhD student – supervisor Stanley Faeth, University of North Carolina, Greensboro). August 16-30, 2013. Purpose of visit: Gaining experience with molecular tools for endophytes.

Lindsey Slaughter (PhD student – Rebecca McCulley, University of Kentucky). May 18-24, 2014. Purpose of visit: Gaining experience with molecular tools for endophytes.

Patricia Mc Cargo (PhD student – Leo Iannone, University of Buenos Aires). October 17 – December 17, 2014. Purpose of visit: Gaining experience with molecular tools for endophytes.

Tatsiana Shymanovich (PhD student – supervisor Stanley Faeth, University of North Carolina, Greensboro). January 26 – February 6, 2015. Purpose of visit: Gaining experience with molecular tools for endophytes.

Michelle Sneck (PhD student – supervisor Tom Miller, Rice University, Houston, Texas) April 28 – May 8, 2015. Purpose of visit: Gaining experience with molecular tools for endophytes.

Tatsiana Shymanovich (PhD student – supervisor Stanley Faeth, University of North Carolina, Greensboro). May 4 – May 15, 2015. Purpose of visit: Gaining experience with molecular tools for endophytes.

Qing Chai (PhD student – supervisor Chunjie Li, Lanzhou University, China). May 18 – 22, 2015. Purpose of visit: Gaining experience with molecular tools for endophytes.

Daniel Berry (PhD student – supervisor Barry Scott, Massey University, New Zealand). May 28 – June 13, 2015. Purpose of visit: RT-qPCR analysis of the *irlA* cluster with stroma vs non-stroma samples collected from Oregon.

Michelle Sneck (PhD student – supervisor Tom Miller, Rice University, Houston, Texas) August 18 – September 1, 2015. Purpose of visit: SSR evaluation of Canada wildrye.

Jonathan Knowles (PhD student – Lancaster University, UK). February 20 – 27, 2016. Purpose of visit: Gaining experience with molecular tools for endophytes.

Ximena Cibils Stewart (Entomologist – Programa Nacional de Investigación en Pasturas y Forrajes, INIA, Estanzuela, Uruguay). September 11 – 23, 2016. Purpose of visit: Gaining experience with molecular tools for endophytes.