Curriculum Vitae

Wusheng Liu, Ph.D.

Department of Horticultural Science
North Carolina State University
Raleigh, NC 27695-7609

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EDUCATION

Ph.D. in Botany, University of Tennessee, Knoxville, TN, 2007

M.S. in Botany, Northeast Forestry University, Harbin, China, 1996

B.S. in Landscape Architecture, Northeast Forestry University, Harbin, China, 1993

PROFESSIONAL EXPERIENCE

01/2018 – *present*: **Assistant Professor** in Translational Genomics & Plant Bioengineering, Department of Horticultural Science, North Carolina State University (70% research, 25% teaching and mentoring, and 5% service).

12/2015 – 12/2017: **Research Assistant Professor** in Plant Biotechnology & Plant Synthetic Biology, Department of Plant Sciences, University of Tennessee, Knoxville (100% research).

09/2008 – 11/2015: **Post Doctoral Research Associate**, **Ivan Racheff Chair of Excellence,** Department of Plant Sciences, University of Tennessee, Knoxville.

07/2007 – 08/2008: **Post Doctoral Research Associate**, Department of Biochemistry & Cellular & Molecular Biology, University of Tennessee, Knoxville.

12/2004 – 12/2006: **Graduate Teaching Assistant**, Department of Ecology & Evolutional Biology, University of Tennessee, Knoxville.

08/2000 – 11/2004: **Graduate Assistant**, Department of Botany, University of Tennessee, Knoxville.

08/1998 – 07/2000: **Lecturer,** College of Forestry Resources & Environment, Beijing Forestry University, Beijing, China.

07/1996 – 07/1998: **Assistant Lecturer**, College of Forestry Resources & Environment, Beijing Forestry University, Beijing, China.

PROFESSIONAL MEMBERSHIPS

- American Society of Horticultural Science (ASHS).

HONORS AND AWARDS

- **Fellow, the inaugural ASHS Leadership Academy**, 2021.
- **First Place, ASHS Early Career Competition Award**, 2021.
- Liu et al. (2020) was recommended by **F1000.**
- **Winner** of the **travel award for U.S. Early Career Scientists** from the 28th InternationalConference of Arabidopsis Research (ICAR), St. Louis, MO, 2017.

- The **Cover Photo** on *Plant Biotechnology Journal* 12 (4), 2014.
- **Winner** of the inaugural **Ivan Racheff Chair of Excellence Best Paper of the Year Award**,University of Tennessee, 2013.
- The **Featured Article** on *Nature Reviews Genetics* 14 (11), 2013.
- The **Cover Photo** on *Plant Biotechnology Journal* 11 (9), 2013.
- The **Cover Photo** on *Plant Biotechnology Journal* 11 (5), 2013.

TEACHING

- HS/GN/CS 720 'Molecular biology in plant breeding' (Solo-instructor; 3 credit hours; Spring 2021).
- HS 495/590 'Biotechnologies for crop improvement' (Solo-instructor; 3 credit hours; Spring 2020).
- Guest lecture, 'Genetic editing of horticultural crops: Opportunities and constraints' in HS703 'Breeding asexually propagated crops' taught by Dr. Craig Yencho. April 22, 2021.
- Guest lecture, 'The beauty of plant biotechnology' in Horticultural Science Summer Institute at NCSU taught by Liz Driscoll. July 10, 2019.
- Guest lecture, 'The future of plant biotechnology: genome editing and concluding perspectives' in HS 703 'Breeding asexually propagated crops' taught by Dr. Craig Yencho. April 18, 2019.

FUNDING GRANTS (Total: $2.0 M; To Liu's program at NCSU: $1.4 M)

2021	Vindara Inc. Hernandez, R. (PI), **Liu, W.** $57,994.
2021-2023	BASF. **Liu, W.** (PI) $250,000.
2021-2023	NCDACS New and Emerging Crops Program. Ranney, T. (PI), Touchell, D., Da, K., **Liu,W.,** Davis, J.M., Suchoff, D.H. $80,100.
2021-2022	Southern IPM Enhancement Grants. **Liu, W.** (PI), Louws, F., Duduit, J. $30,000
2020-2022	USDA-AFRI Agricultural Innovations through Genome Editing Program. **Liu, W.** (PI) $200,000.
2020-2022	BASF. Hernandez, R. (PI), **Liu, W.** $232,000.
2020	NCSU Plant Breeding Research and Equipment Funding. **Liu, W.** (PI), Yencho, C., Kosentka, P., Duduit, J. $8,000.
2020-2021	NC Crop Improvement Association. Ranney, T. (PI), Touchell, D., **Liu, W.**, $12,000.
2019	NCSU Stuber Grant. **Liu, W.** (PI), Panthee, D., Veazie-Perkins, P. $12,500.
2019-2021	USDA-NIFA Special Research Grants Program – Potato Breeding Research. Yencho, C. (PI), Clough, M., **Liu, W.** $167,562.
2019-2026	USDA-ARS Fruit, Nut, Sugarcane & Nursery Crops (FNSN) Program. **Liu, W.** (PI), Ranney, T., Ashrafi, H., Touchell, D. $262,767.
2019-2022	Foundation for Food and Agriculture Research (FFAR) Fellows Program and

	Syngenta. $195,000.
2019	Vindara Inc. Hernandez, R. (PI), **Liu, W.** $32,000.
2019	NCSU CALs CRC Equipment Funds. **Liu, W.** (PI), Yencho, C., Ranney, T., Fernandez, G., Ashrafi, H., Meyer, E., Neal, J., Gunter, C.C., Hoffmann, M. $12,337.
2018-2019	NC Tomato Growers Association. **Liu, W.** (PI), Panthee, D., Veazie-Perkins, P. $1,400.
2017	Tennessee Soybean Promotion Board. Stewart, C.N., Jr. (PI), **Liu, W.**, Mazarei, M. $20,000.
2016-2019	USDA-NIFA Biotechnology Risk Assessment Research (BRAG) Program. **Liu, W.** (PI); Johnson, J. $465,000 (non-cost extension; $266,094 to NCSU).
2013	AgResearch Innovation Grant, University of Tennessee. Stewart, C.N., Jr. (PI), **Liu, W.** $20,000.
2013	UTRF Technology Maturation Fund, University of Tennessee. Stewart, C.N., Jr.(PI), **Liu, W.** $15,000.

PATENTS

Issued:

1. **Inducible Plant Promoters and the Use Thereof.** U.S. Patent 9,157,087. Issued Oct. 13, 2015. Inventors: Stewart, C.N., Jr., **Liu**, **W.,** Mazarei, M.

REFEREED PUBLICATIONS

*****Corresponding author. Undergraduate and (visiting) graduate students are underlined and doubleunderlined, respectively:

1. Zhao, F., Maren, N.A., Kosentka, P.Z., Liao, Y.-Y., Lu, H., Duduit, J.R., Huang, D., Ashrafi, H., Zhao, T., Huerta, A.I., Ranney, T.G., **Liu, W.*** (2021) An optimized protocol for stepwise optimization ofreal-time RT-PCR analysis. ***Horticultural Research*** 8:179.
2. Maren, N.A, Zhao, F., Aryal, R., Touchell, D.H., **Liu, W.**, Ranney, T.G., Ashrafi, H. (2021) Reproductive developmental transcriptome analysis of *Tripidium ravennae* (Poaceae). ***BMC Genomics*** 22:483.
3. Huang, D., Kosentka, P.Z., **Liu, W.*** (2021) Synthetic biology approaches in regulation of targeted gene expression. ***Current Opinion in Plant Biology*** 63:102036 (Invited review)
4. Yang, Y., Lee, J., Poindexter, M., Shao, Y., **Liu, W.**, Lenaghan, S., Ahkami, A., Blumwald, E., Stewart, C.N. Jr. (2021) Rational design and testing of abiotic stress inducible synthetic promoters from poplar *cis*-regulatory elements. ***Plant Biotechnology Journal*** (*In press*). doi: 10.1111/pbi.13550
5. **Liu, W*,** Rudis, M.R., Cheplick, M.H., Millwood, R.J., Yang, J.-P., Ondzighi-Assoume, C.A., Montgomery, G.A., Burris, K.P., Mazarei, M., Chesnut, J.D., Stewart, C.N., Jr.[*] (2020) Lipofectionmediated genome editing using DNA-free delivery of the Cas9/gRNA ribonucleoprotein into plant cells. ***Plant Cell Reports*** 39:245-257.

   – Recommended by F1000.

6. Wang, H., Xie, Y., **Liu, W.**, Tao, G., Sun, C., Sun, X., Zhang, S. (2020) Transcription factor LkWOX4is involved in adventitious root development in *Larix kaempferi*. ***Gene*** 758:144942.
7. Lu, H., Luo, Z., Wang, L., **Liu, W.**, Li, D., Belwal, T., Xu, Y., Li, L. (2020) FaMYB9 is involved in theregulation of C6 volatile biosynthesis in strawberry. ***Plant Science*** 293:110422.
8. Ondzighi-Assoume, C.A., Willis, J.D., Ouma, W.K., Allen, S.M., King, Z., Parrott, W.A., **Liu, W.**,Burris, J.N., Lenaghan, S.C., Stewart, C.N., Jr. (2019) Embryogenic cell suspensions for high capacity genetic transformation and regeneration of switchgrass (*Panicum virgatum* L.). ***Biotechnology for Biofuels*** 12:1-14.
9. Yu, J., Gao, L., **Liu, W.**, Song, L., Xiao, D., Liu, T., Hou, X., Zhang, C. (2019) Transcription coactivator ANGUSTIFOLIA3 (AN3) regulates leafy head formation in Chinese cabbage. ***Frontiers in Plant Science*** 10:520.
10. **Liu, W.‡**, Mazarei, M.‡, Ye, R.‡, Peng, Y., Shao, Y., Baxter, H.L., Sykes, R.W., Turner, G.B., Davis,M.F., Wang, Z.-Y., Dixon, R.A, Stewart, C.N., Jr. (2018) Switchgrass (*Panicum virgatum* L.) promoters for green tissue-specific expression of the *MYB4* transcription factor for reduced-recalcitrance transgenic switchgrass. ***Biotechnology for Biofuels*** 11:122. (‡Co-firstauthor).
11. Xu, W., **Liu, W.**, Ye, R., Mazarei, M., Zhang, X., Stewart, C.N., Jr. (2018) A *profilin* gene promoterfrom switchgrass (*Panicum virgatum* L.) directs strong and specific transgene expression to vascular bundles in rice. ***Plant Cell Reports*** 37:587-597.
12. **Liu, W.**, Stewart, C.N., Jr. (2016) Plant synthetic promoters and transcription factors. ***CurrentOpinion in Biotechnology*** 37:36-44.
13. Ye, R., Huang, H., Alexander, J., **Liu, W.**, Millwood, R.J., Wang, J., Stewart, C.N., Jr. (2016) Fieldstudies of dynamic pollen production, deposition and dispersion from glyphosate-resistant horseweed (*Conyza canadensis*). ***Weed Science*** 64:101-111.
14. **Liu, W.**, Stewart, C.N., Jr. (2015) Plant synthetic biology. ***Trends in Plant Science*** 20:309-317.
15. **Liu, W.**, Mazarei, M., Peng, Y., Fethe, M.H., Rudis, M.R., Lin, J., Millwood, R.J., Arelli, P.R., Stewart, C.N., Jr. (2014) Computational discovery of soybean promoter *cis*-regulatory elementsto enable the construction of soybean cyst nematode inducible synthetic promoters. ***Plant Biotechnology Journal*** 12:1015-1026.
16. Fethe, M.H., **Liu, W.**, Burris, J.N., Millwood, R.J., Mazarei, M., Rudis, M.R., Yeaman, D.G., Dubosquielle, M., Stewart, C.N., Jr. (2014) The performance of pathogenic bacterial phytosensing transgenic tobacco in the field. ***Plant Biotechnology Journal*** 12:755-764.
17. **Liu, W.**, Rudis, M.R., Peng, Y., Mazarei, M., Millwood, R.J., Yang, J.-P., Xu, W., Chesnut, J.D.,Stewart, C.N., Jr. (2014) Synthetic TAL effectors for targeted enhancement of transgene expression in plants. ***Plant Biotechnology Journal*** 12:436-446. (Featured Cover)
18. **Liu, W.**, Yuan, J.S., Stewart, C.N., Jr. (2013) Advanced genetic tools for plant biotechnology. ***Nature Reviews Genetics*** 14:781-793. (Featured Article)

19. Lin, J., Mazarei, M., Zhao, N., Zhu, J., Zhuang, X., **Liu**, **W.,** Pantalone, R.V., Arelli, P.R., Stewart,C.N., Jr., Chen, F. (2013) Overexpression of a soybean salicylic acid methyltransferase gene confers resistance to soybean cyst nematode. ***Plant Biotechnology Journal*** 11:1135-1145. (Featured Cover)
20. **Liu, W.**, Mazarei, M., Rudis, M.R., Fethe, M.H., Peng, Y., Millwood, R., Shoene, G., Burris, J.N., Stewart, C.N., Jr. (2013) Bacterial pathogen phytosensing in transgenic tobacco and *Arabidopsis*.***Plant Biotechnology Journal*** 11:43-52 (Featured Cover on *Plant Biotechnology Journal* 11 (5)).
21. Karve, R., **Liu**, **W.,** Willet, S.G., Torii, K.U., Shpak, E.D. (2011) The presence of multiple introns isessential for *ERECTA* expression in *Arabidopsis.* ***RNA*** 17:1902-1921.
22. Mazarei, M., **Liu**, **W.,** Al-Ahmad, H., Arelli, P.R., Pantalone, V.R., Stewart, C.N., Jr. (2011) Geneexpression profiling of resistant and susceptible soybean lines infected with soybean cyst nematode. ***Theoretical and Applied Genetics*** 123:1193-1206.
23. Mann, D.G.J., King, Z., Liu, W., Joyce, B.L., Percifiel, R.J., Hawkins, J.S., LaFayette, P.R., Artelt, B.A., Burris, J.N., Mazarei, M., Bennetzen, J.L., Parrott, W.A., Stewart, C.N., Jr. (2011) Isolationand characterization of two switchgrass (*Panicum virgatum* L.) ubiquitin promoters (*PvUbi1* and *PvUbi2*) for use in monocot, dicot and fern transformation. ***BMC Biotechnology*** 11:74.
24. **Liu, W.**, Mazarei, M., Rudis, M.R., Fethe, M.H., Stewart, C.N., Jr. (2011) Rapid *In vivo* analysis ofsynthetic promoters for plant pathogen phytosensing. ***BMC Biotechnology*** 11:108.
25. Shaw, J., Lickey, E.B., Beck, J.T., Farmer, S.B., **Liu, W.**, Miller, J., Siripun, K.C., Winder, C.T., Schilling, E.E., Small, R.L. (2005) The tortoise and the hare II: relative utility of 21 noncoding chloroplast DNA sequences for phylogenetic analysis. ***American Journal of Botany*** 92:142 -166.(The #2 Most Cited paper in *American Journal of Botany*).
26. Zhuo, L., Wang, L., Chen, Q., **Liu, W.** (1999) Wild fruit resources and exploitation in Xiaoxing'an Mountains. ***Journal of Forestry Research*** 10:31-33.
27. Li, G., Zhang, Y., Wang, J., **Liu, W.** (1998) Investigation on the medical plant resources of Beizhang experimental area in the upper reaches of Miyun reservoir. ***Quarterly of Forest By-Product And Speciality in China*** 2:45-46.
28. Zhang, Y., Wang, J., **Liu, W.**, Li, G., Li, F. (1997) The preliminary study on the vegetation qualitiesof Beizhuang experimental area in the upper reaches of Miyun reservoir. ***Journal of Beijing Forestry University*** 19:39-44.

NON-REFEREED PUBLICATIONS

1. Stewart, C.N., Jr., **Liu, W.** (2017) Synthetic promoters for precise control of gene expression inplants. ***Chemical Engineering Progress*** 113:36-39.
2. Stewart, C.N., Jr., **Liu, W.** (2013) Deployable phytosensors for plant pathogen detection. ***ISBNews Report.***

BOOK CHAPTERS

1. **Liu, W.**, Stewart, C.N., Jr. (2016) The Future: advanced plant biotechnology, genome editing and synthetic biology. *In: Plant Biotechnology and Genetics: Principles, Techniques and Applications*, Stewart, C.N., Jr. (Ed.), 2cd edition (textbook), Wiley and Sons, New Jersey, USA.
2. **Liu, W.**, Stewart, C.N., Jr. (2016) Plant systems biology. *In: Plant Biotechnology and Genetics: Principles, Techniques and Applications*, Stewart, C.N., Jr. (Ed.), 2cd edition (textbook), Wileyand Sons, New Jersey, USA.
3. **Liu, W.**, Miki, B., Stewart, C.N., Jr. (2016) Promoters and marker genes. *In: Plant Biotechnologyand Genetics: Principles, Techniques and Applications*, Stewart, C.N., Jr. (Ed.), 2cd edition (textbook), Wiley and Sons, New Jersey, USA.
4. Zhuo, L., **Liu, W.**, Yang, W. (1994) Investigation and utilization of the wild fruit resources in Xiaoxing'an Mountains. *In: New Studies on Forest Management and Forest Resource Exploitation in Northeast China-Zhong Guo Dong Bei Lin Qu (1990-1994)*, Cui Xiao Yang & Wang Qing Wen (Ed.), Heilongjiang Science & Technology Press, Harbin, China, pp.266-270.
5. Zhuo, L., Yang, W., **Liu, W.** (1994) Early spring wild herbal flower resources and its utilization in urban landscaping in Heilongjiang Province. *In: New Studies on Forest Management and ForestResource Exploitation in Northeast China-Zhong Guo Dong Bei Lin Qu (1990-1994)*, Cui Xiao Yang & Wang Qing Wen (Ed.), Heilongjiang Science & Technology Press, Harbin, China, pp.286-290.

LAB MEMBERS

Current:

Dr. Debao Huang	Postdoc/Research Associate (2017-)
Dr. Pawel (Paul) Kosentka	Postdoc (2018-)
Dr. Nathan Maren	Postdoc (2020-)
Fangzhou Zhao	Visiting PhD student from Nanjing Agricultural University (2019-)
James Duduit	PhD graduate student (2020-)
Sihui Ni	PhD graduate student (2019- ; with Dr. Craig Yencho)
Meghan Roche	PhD graduate student (2019- ; with Dr. Ricardo Hernandez)
Davis Harmon	MS graduate student (2020- ; with Dr. Tom Ranney)
Emily Brooks	MS graduate student (2020-)
Caroline Barrett	Undergraduate worker (2021-)
Paulina Bonilla	Undergraduate worker (2021-)
Anna Nelson	Undergraduate worker (2021-)

Former:

Jeremy McAdams	Undergraduate worker (2020-2021), currently working in Pairwise
Hongyan Lu	Visiting PhD student from Zhejiang University (2019-)

James Duduit	MS graduate student (2018-2020), currently a PhD graduate student
Liwei Gao	Visiting PhD student from Nanjing Agricultural University (2017-2019), currently Assistant Professor (Lecturer) in Ganzhou Normal University, China
Xianlian Chen	Visiting PhD student from Nanjing Agricultural University (2018- 2019)
Yonghui Wu	Temporary technician (2017-2018), currently working for a company in China
Morgan Miller	Undergraduate worker (2018-2020)
Via Abiera	Undergraduate worker (2019-2020)

RESEARCHERS MENTORED AT UNIVERSITY OF TENNESSEE

Technician: Hua Yuan (2016-2017); Yonghui Wu (2017-2018)

Visiting Ph.D. student: Wenzhi Xu (2013-2014)

Ph.D. rotation student: Kristine G. Cabugao (2015)

M.S. student: Michael H. Fethe (2011-2013)

B.S. students: Ralph B. Laurel (2016-2017); Elgin H. Akin (2016-2017); Robert G. Sears (2017); Matthew H. Cheplick (2014-2016); Tammy L. Stackhouse (2015-2016); Kelsey E. Harrell (2016);Jessica S. Layton (2016); Colin G. Brice (2016); Elgin A. Henry (2016); Kacie N Reynolds (2015); Jacob L. Crawford (2015); Garret A. Montgomery (2014); David A. Schmidt (2013-2014); Michael H. Fethe (2010-2012); Andrew Moser (2012); Duncan G. Yeamen (2010); Paul Lee (2010)

Undergraduate Independent Studies: Tammy L. Stackhouse (2016); Kelsey E. Harrell (2016); Matthew H. Cheplick (2014); David A. Schmidt (2014); Micheal H. Fethe (2011);

High school student: Rana Hewezi (2013)

PROFESSIONAL SERVICES

On campus:

University Service:

- Lead organizer for the NCSU INTRINSyC weekly seminar series. July 2019 – June 2020.
- Faculty member, Plant Breeding Consortium, NCSU, 2018 – *present*.
- Affiliated faculty, Genetics Graduate Program, NCSU, 2019 – *present*.
- Faculty host for BIT 495 Professional Development Student Mock Job Interview, NCSU, April2019.
- Graduate school representative and graduate student committee for Quibria Guthrie in Department of Chemistry, September 2018 – April 2021.
- Departmental representative for the Genetics and Genomics Scholars Recruitment Program,February 18, 2021.

College Service:

- Plant transformation laboratory restructuring committee, May 2019 – December 2019
- Search committee – Director of plant transformation laboratory (PTL), January 2019 – May2020.
- Plant transformation laboratory (PTL) advisory committee, March 2021 – *present*.

Departmental Service:

- Graduate admissions committee, January 2019 – *present*;
- Search committee – Nursery/Landscape tenure track assistant professor, August 2019 –May 2020;
- Horticultural science department peer review of faculty teaching, August 2020 – October 2020 (for 1 faculty member).
- Faculty representative for departmental undergraduate recruitment, Spring 2021 (for 1 high schooler).
- Graduate student committee: Samuel Acheampong (Committee), James Duduit (Chair), Sihui Ni (co-Chair), Davis Harmon (co-Chair), Meghan Roche (co-Chair), Emily Brooks (Chair).
- Faculty host, Horticultural science departmental seminar series (for 2 speakers).

Off campus:

- Editorial positions:

  August 2020 – *present*: ***Plant Cell Reports*, Review Editor**.

  December 2017 – July 2020: ***Plant Cell Reports*, Associate Editor**.

  March 2014 – February 2019*:* ***Ecotoxicology*, Associate Editor.**

  May 2013 – February 2014*:* ***Ecotoxicology*, Editorial Board Member.**
- Secretary, Chair-elect, and Chair, American Society of Horticultural Science (ASHS) Plant Biotechnology Professional Interest Group, 2019 – 2022.
- Secretary and Chair-elect, American Society of Horticultural Science (ASHS) Asian Professional Interest Group, 2020 – 2022.
- Endowment Fund Committee, ASHS, 2020 – 2025.
- Plenary (William A. "Tex" Frazier) & Invited Speakers Selection Committee, ASHS, 2021 – 2026.
- Proposal reviewer for University of Maryland Industrial Partnerships (MIPS) Program, 2019.
- Member of the International Organizing Committee & Session Chair, the 4th International Conference of Plant Transformation & Biotechnology, Vienna, Austria, June 29-30, 2017.
- Invited manuscript peer reviewer (>100 times in total) for: *Nature Plants*; *Plant Journal*; *Plant Biotechnology Journal; Horticultural Research; BMC Genomics; PLoS*

ONE; Planta; Plant Molecular Biology; Plant Cell Tissue and Organ Culture; Plant Cell Reports; Molecular Biology Reports; Ecotoxicology; BMC Biotechnology; Basic and Applied Ecology; Environmental and Experimental Botany; Biologia Plantarum; Environmental Management;Plant Breeding; Environmental Engineering Science; Entomological Science; Botanical Studies; Journal of Crop Science.

INTERNET-BASED RESEARCH DISSEMINATION

Departmental news about my program:

- https://cals.ncsu.edu/horticultural-science/news/wusheng-liu-ashs-early-career-award/
- https://cals.ncsu.edu/horticultural-science/news/measuring-and-translating-success/

News about the lipofection method I developed for gene editing in a non-GMO manner:

- https://cals.ncsu.edu/news/crispr-plants-new-non-gmo-method-to-edit-plants/
- https://cals.ncsu.edu/horticultural-science/news/crispr-plants-new-non-gmo-method-to-edit-plants/
- https://f1000.com/prime/thefaculty/member/1018014/contact?utm_medium=email&utm_source=prime_ypp
- https://newatlas.com/biology/crispr-edits-crops-gmos/
- https://geneticliteracyproject.org/2020/05/13/non-gmo-gene-editing-new-technique-edits-p lant-dna-without-use-of-foreign-bacterial-genes/
- https://www.biotecnika.org/2020/05/non-gmo-crispr-method-to-alter-genome-not-inserting-foreign-dna/
- https://www.smartbrief.com/branded/D4C8EBAD-9C67-4D55-869C-CC2C8F893F9E/FA799481-7010-4EAB-989D-451A9CAD080E
- http://naukawpolsce.pap.pl/aktualnosci/news%2C82254%2Czrobili-rosliny-gmo-ktore-nie-sa-gmo.html
- https://www.chilebio.cl/2020/05/15/nueva-tecnica-para-editar-geneticamente-cultivos-sin-u sar-genes-bacterianos/
- https://picosico.org/tag/crispr
- https://www.immortalitymedicine.tv/category/human-genetic-engineering/

INVITED PRESENTATIONS

1. **Liu, W.** Toward Transgene-free Plant Gene Editing. **The 38th Annual Conference of the Mid-Atlantic Plant Molecular Biology Society (MAPMBS) Meeting** (virtual). August 16, 2021.
2. **Liu, W.** Building an Integrated Research and Education Program in Translational Genomics for Specialty Crop Improvement. **ASHS Annual Conference**, Denver, CO. August 05-09, 2021.
3. **Liu, W.** Cleistogamy Engineering in Camelina for Bioconfinement. **ASHS Annual**

Conference, Denver, CO. August 05-09, 2021.

4. **Liu, W.** Coordinated Transcriptional Regulation of the Carotenoid Biosynthesis Pathway Genes Contributes to Fruit Lycopene Content in High-Lycopene Tomato Cultigens. **The 8th International Horticultural Research Conference** (virtual), Nanjing, China, July 20-22, 2021.
5. **Liu, W.** Translational Genomics for Vegetable Crop Improvement. **H.M. Clause** (virtual), February 22, 2021.
6. **Liu, W.** Translational Genomics for Crop Improvement. **NCSU Horticultural Science seminar series,** September 08, 2020.
7. **Liu, W.** Functional Genomics for Crop Trait Improvement. **NC Plant Molecular Biology Retreat**,Wrightsville Beach, NC. September 13-15, 2019.
8. **Liu, W.** Lipofection-mediated DNA-free Delivery of the Cas9/gRNA Ribonucleoproteins into Plant Cells for Genome Editing. **ASHS Annual Conference**, Las Vegas, NV. July 21-25, 2019.
9. **Liu, W.** The Beauty of Plant Biotechnology. **NCSU Horticultural Science Summer Institute (HSSI),** Raleigh, NC. July 10, 2019.
10. **Liu, W.** Bioconfinement of *Camelina sativa* as a Sustainable Oilseed Crop via Cleistogamy. **USDABRAG PD meeting**, DC. June 06, 2019.
11. **Liu, W.** Genome Editing of Nursery and Floriculture Crops. **USDA FNRI Plant Breeding Conference**, Mills River, NC. May 06, 2019.
12. **Liu, W.** Development of Enabling Tools for Crop Trait Improvement. **NCSU Genetics seminar series,** April 15, 2019.
13. **Liu, W.** Plant Synthetic Biology and Translational Genomics. **NCSU INTRINSyC seminar series**, January 26, 2018.
14. **Liu, W.** Synthetic Promoters and Transcription Factors for Targeted Transgene Activation inPlants. **Plant & Animal Genomes (PAG) XXVI**, San Diego, CA. January 13-17, 2018.
15. **Liu, W.** The *Arabidopsis thaliana* MYB Transcription Factor ETC2 Confers Higher Yield and SeedSize in Transgenic Soybean (*Glycine max*). **The 28th International Conference of Arabidopsis Research (ICAR)**, St. Louis, MO. June 19-23, 2017.
16. **Liu, W.** Synthetic Promoters for Targeted Transgene Activation in Plants. **The 4th InternationalConference of Plant Transformation & Biotechnology**, Vienna, Austria. June 29-30, 2017.
17. **Liu, W.** A Plant Synthetic Biology Approach for Regulation of Transgene Expression and Precision Genome Editing. **Department of Horticultural Science seminar series**, North Carolina State University, January 13, 2017.
18. **Liu, W.** Plant Synthetic Biology. **Department of Agricultural and Environmental Sciences seminar series**, Tennessee State University. June 29, 2016.
19. **Liu, W.** Synthetic Promoters and Transcription Factors for the Regulation of Transgene

Expression in Plants. **Plant Research Center seminar series**, University of Tennessee. October29, 2015.

20. **Liu, W.** A Plant Synthetic Biology Approach for Targeted Transgene Activation and PrecisionGenome Editing. **Department of Plant Sciences seminar series**, University of Tennessee. August 31, 2015.
21. **Liu, W.** Synthetic Promoters for Targeted Transgene Activation in Plants. **2014 World Forum onBiology – Joint Meeting of the Society of In Vitro Biology and the Society of Cryobiology**, Savannah, Georgia. June 4, 2014.
22. **Liu, W.** Transcription Factor-assisted Targeted Transgene Activation in Plants. **Department ofPlant Sciences seminar series**, University of Tennessee. March 31, 2014.
23. **Liu, W.** TALE Transcription Factors-mediated Gene Expression. **Department of Plant Science seminar series**, University of Tennessee. March 05, 2012.

CONTRIBUTED PRESENTATIONS

1. Ondzighi-Assoume, C.A., Wills, J.D., Taheri, A., Allen, S.M., King, Z., Parrott, W.A., **Liu, W.**, Burris, J.N., Lenaghan, S.C., Stewart, C.N., Jr. Development of Efficient and Reproducible *Agrobacterium*-mediated Transformation and Regeneration Systems for Highly Embryogenic Cell Suspension Cultures in Switchgrass (*Panicum virgatum* L.). **American Society of Plant Biology (ASPB)**, Honolulu, Hawaii, USA. June 23-28, 2017 (**Invited speaker:** Ondzighi-Assoume, C.A.)
2. **Liu, W.**, Stewart, C.N., Jr. The design of Synthetic Promoters and Transcription Factors. **2cd Cereal Engineering Consortium Workshop.** Boston, MA. June 8-9, 2015 (**Invited speaker:**Stewart, C.N., Jr.)
3. Lenaghan, S., Stewart, C.N., Jr., **Liu, W.**, Dhillon, T. Single Cell Testing Systems in Cereals. **2cdCereal Engineering Consortium Workshop.** Boston, MA. June 8-9, 2015 (**Invited speaker:** Lenaghan, S.)
4. **Liu, W.**, Schmidt, D.A., Millwood, R.J., Rudis, M.R., Mazarei, M., Chesnut, J.D., Potter, C.J., Stewart, C.N., Jr. Synthetic Promoters and Transcription Factors for Precise Gene Expression inPlants. **Synthetic Biology Congress**, London, UK. October 21, 2014 (**Invited speaker:** Stewart,C.N., Jr.)
5. **Liu, W.**, Willis, J., Peng, Y., Millwood, R.J., Sang, Y., Mazarei, M., Stewart, C.N., Jr. Plant Synthetic Biology Tools to Transform Bioenergy Feedstocks. **The 36th Symposium on Biotechnology for Fuels and Chemicals**. Clearwater Beach, FL. April 28-May 1, 2014 (**Invited speaker:**Stewart, C.N., Jr.)
6. Stewart, C.N., Jr., **Liu**, **W.,** Rudis, M.R., Peng, Y., Mazarei, M., Millwood, R.J., Yang, J.-P., Chesnut, J.D. Synthetic TAL Effectors for Targeted Gene Activation in Plants. **2013 In Vitro Biology Meeting**, Providence, RI. June 15-19, 2013 (**Invited speaker**: Stewart, C.N., Jr.)
7. Stewart, C.N., Jr., **Liu**, **W.,** Chestnut, J.D. Synthetic TAL Effectors for Targeted Gene Activation in Plants. **Plant Sciences Webinars, Life Technologies**, March 28, 2013 (**Invited speaker**: Stewart,C.N., Jr.)

8. Stewart, C.N., Jr., **Liu**, **W.,** Chestnut, J.D. Enhancing Plant Transgene Expression with TAL Effectors. **Life Technologies Workshop**, **Plant & Animal Genomes XXI Conference**, San Diego, CA. January 12-16, 2013 (**Invited speaker**: Stewart, C.N., Jr.)
9. Stewart, C.N., Jr., Mazarei, M., **Liu**, **W.,** Rao, M.R., Rudis, M.R., Abercrombie, L.G., Mann, D.G.J.,Peng, Y., Balasubramaniam, M. Phytosensors: Plants to Report Pathogens and Environmental Contaminants. **Plant & Animal Genomes XIX Conference**, San Diego, CA. January 15-19, 2011 (**Invited speaker**: Balasubramaniam, M.)
10. Stewart, C.N., Jr., Mazarei, M., **Liu**, **W.**, Rao, M., Rudis, M.R., Abercrombie, L., Mann, D.G.J., Sykes, V. Phytosensors: Plants to Report Plant Pathogens and Environmental Contaminants. **12th International Association for Plant Biotechnology Congress (IAPB)** and **the 2010 In vitro Biology Meeting of the Society for In Vitro Biology (SIVB)**, St. Louis, MI. June 6-11, 2010. Abstract S332 (**Invited speaker**: Stewart, C.N., Jr.)
11. **Liu, W.**, Willet, S., Wilson, R., Shpak, E.D. *ERECTA* Splicing Leads to an Increase in Gene Expression at the Posttranscriptional Level. **American Society of Plant Biology Annual Meeting**, Mérida, Mexico. June 22-25, 2008 (**Invited speaker**: Shpak, E.D.)
12. Shaw, J., Lickey, E., Beck, J., Farmer, S., **Liu**, **W.,** Miller, J., Siripun, K.C., Winder, C., Shilling, E., Small, R. The Tortoise and the Hare II: Relative Utility of 21 Noncoding Chloroplast DNA Sequences for Phylogenetic Analysis. **Botany 2004 Meeting**, Snowbird, TN. July 31-August 5, 2004 (**Invited speaker**: Shaw, J.)
13. Shaw, J., Lickey, E., Beck, J., Farmer, S., **Liu**, **W.,** Miller, J., Siripun, K.C., Winder, C., Shilling, E.,Small, R. Phylogenetic Utility of Fifteen Noncoding cpDNA Regions among Major Lineages of Seed Plants. **Botany 2003 Meeting**, Mobile, AL. July 26-31, 2003 (**Invited speaker**: Shaw, J.)

POSTERS

1. Da, K., Shepard, F, Almeyda, C., Pecota, K., **Liu, W.,** Yencho, G.C. (2021) Leaf Culture and Regeneration in Elite Sweetpotato (*Ipomoea batatas* L.) Genotypes. **Society of In Vitro Biology (SIVB) Annual Meeting**, June 5-9, 2021.
2. Harmon, D., Touchell, D., Da, K., **Liu, W.,** Ranney, T. (2021) Embryogenic Callus Induction of *Rosa hybrid.* **Society of In Vitro Biology (SIVB) Annual Meeting**, June 5-9, 2021.
3. Duduit, J.R., Kosentka, P.Z., Miller, M.A., Blanco-Ulate, B., Lenucci, M.S., Panthee, D.R., Perkins-Veazie, P., **Liu, W.** (2020) Coordinated Transcriptional Regulation of the Carotenoid Biosynthesis Pathway Genes Contributes to Fruit Lycopene Content in High-Lycopene Tomatoes. **SOL International Online Meeting**, November 9-11, 2020.
4. Duduit, J.R., Kosentka, P.Z., Panthee, D.R., Perkins-Veazie, P., **Liu, W**. Identification of the KeyCarotenoid Biosynthesis Pathway Genes Impacting Tomato Fruit Lycopene Content. **National Association of Plant Breeders (NABP)**, Pine Mountain, GA. August 25-29, 2019.
5. **Liu, W.**, Mazarei, M., Ye, R., Peng, Y., Shao, Y., Baxter, H.L., Wang, Z.-Y., Stewart, C.N., Jr. Switchgrass (*Panicum virgatum* L.) Green Tissue-specific Promoters: Identification,

FunctionalCharacterization and Application. **DOE-BESC Retreat**, Chattanooga, TN. July 10-13, 2017.

6. **Liu, W.**, Schmidt, D.A., Millwood, R.J., Cheplick, M.H., Rudis, M.R., Mazarei, M., Potter, C.J., Stewart, C.N., Jr. The QF/QS Binary Expression System for Regulation of Targeted Transgene Expression in Plants. **Synthetic Biology Congress**, London, UK. October 20-21, 2015.
7. **Liu, W.**, Schmidt, D.A., Millwood, R.J., Cheplick, M.H., Rudis, M.R., Mazarei, M., Chesnut, J.D.,Potter, C.J., Stewart, C.N., Jr. The QF/QS Binary Expression System for Regulation of Targeted Transgene Expression in Plants. **Plant & Animal Genomes XXIII Conference**, San Diego, CA. January 10-14, 2015.
8. Lenaghan, S., N. Labbe, K. Burris, **W. Liu**, J. D. Willis, L. M. Kline, G. Pigna, A. G. Collins, J. Grant, M. R. Rudis, S. Allen, C. N. Stewart, Jr. High Throughput Transformable Switchgrass Culture System. **ARPA-E Petro Program Industry Meeting**. Research Triangle Park, NC. September 15-16, 2014.
9. **Liu, W.**, Mazarei, M., Fethe, M.H., Lin, J., Arelli, P.R., Pantalone, V.R., Stewart, C.N., Jr. From Bioinformatics to Experimental Biology: Looking for *de novo* Inducible Motifs in Soybean Genome during a Compatible Interaction between Soybean and Soybean Cyst Nematode. **Plant & Animal Genomes XX Conference**, San Diego, CA. January 14-18, 2012.
10. **Liu, W.**, Rao, M.R., Mazarei, M., Stewart, C.N., Jr. *De novo* Motif Discovery from Soybean CystNematode-induced Genes in Soybean. **Southern Section American Society of Plant Biology Annual Meeting**, Knoxville, TN. April 10-12, 2010.
11. **Liu, W.**, Rudis, M.R., Sykes, V.R., Mazarei, M., Stewart, C.N. Jr. *In vivo* Analysis of Synthetic Promoters by Agroinfiltration of Tobacco Leaves for Pathogen Phytosensing. **Southern SectionAmerican Society of Plant Biology Annual Meeting**, Knoxville, TN. April 10-12, 2010.
12. Mazarei, M., Al-Ahmad, H., **Liu**, **W.,** Arelli, P.R., Pantalone, V.R., Stewart, C.N., Jr. Gene Expression Profiling of a Resistant and a Susceptible Soybean Challenged with Soybean Cyst Nematode. **World Soybean Research Conference VIII**, Beijing, China. August 10-15, 2009.
13. Wilson, R., **Liu**, **W.,** Willet, S., Shpak, E.D. ERECTA mRNA Splicing Leads to an Increase in theGene Expression at the Posttranscriptional Level. **China-US Workshop on Biotechnology ofBioenergy Plants,** Knoxville, TN. Nov. 16-17, 2009.
14. **Liu, W.**, Willet, S., Wilson, R., Shpak, E.D. *ERECTA* Splicing Leads to an Increase in Gene Expression at the Posttranscriptional Level. **American Society of Plant Biology Annual Meeting**, Mérida, Mexico. June 22-25, 2008.