

**Larry Matthew York**  
*Curriculum Vitae*

Noble Research Institute  
Root Phenomics Laboratory  
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www.noble.org/rootphenomics

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**RESEARCH INTERESTS**

Root functional phenomics, agroecology, physiology, simulation modeling, R statistics

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**EDUCATION**

2014	Pennsylvania State University	Ph.D.	Ecology
2006	University of Kentucky	B.S.	Biology

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**ACADEMIC POSITIONS**

2017–	Assistant Professor	Noble Research Institute
2016–2017	Postdoctoral Research Fellow	University of Missouri
2014–2016	Postdoctoral Research Fellow	University of Nottingham

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**RESEARCH GRANTS**

2018	OCAST (\$99,247), “Unraveling genes underlying dual-purpose wheat seedling drought and heat tolerance using automated phenotyping platforms.”
2016	USDA-NIFA EAGER (\$290,000), “High-throughput phenotyping of multiple ion uptake kinetics in maize roots.”
2011	College of Agricultural Sciences Competitive Grant, PSU (\$1000).

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**PUBLICATIONS**

**Peer-reviewed Journal Articles** (10 articles, 332 citations, h-index: 8)

Huang, H., Liang, L., Sturrock, C. J., Pandey, B. K., Giri, J., Mairhofer, S., Wang, D., Muller, L., Tan, H., **York, L. M.**, Yang, J., Song, Y., Kim, Y-J, Qiao, Y., Xu, J., Kepinski, S., Bennett, M. J. & Zhang, D. (2018). Rice actin binding protein RMD controls crown root angle in response to external phosphate. *Nature Communications*, 9 (1), 2346. doi: 10.1038/s41467-018-04710-x.

**York, L. M.** and Lobet, G. (2017). Phenomics of root system architecture: Measuring and analyzing root phenes. Teaching Tools in Plant Biology: Lecture Notes. *The Plant Cell (online)*. doi: 10.1105/tpc.117.tt0917

- York, L. M.**, Silberbush, M., and Lynch, J. P. (2016). Spatiotemporal variation of nitrate uptake kinetics within the maize (*Zea mays* L.) root system is associated with greater nitrate uptake and interactions with architectural phenes. *Journal of Experimental Botany* **67**, 3763-3775.
- York, L. M.**, Carminati, A., Mooney, S. J., Ritz, K., Bennett, M. J. (2016). The holistic rhizosphere: integrating zones, processes, and semantics in the soil influenced by roots. *Journal of Experimental Botany* **67**, 3629-3643.
- York, L. M.** and Lynch, J. P. (2015). Intensive field phenotyping of maize (*Zea mays* L.) root crowns identifies phenes and phene integration associated with plant growth and nitrogen acquisition. *Journal of Experimental Botany* **66**, 5493-5505.
- York, L. M.**, Galindo-Castañeda, T., Schussler, J., and Lynch, J. P. (2015). Evolution of US maize (*Zea mays* L.) root system architectural and anatomical phenes over the past 100 years corresponds to increased tolerance of nitrogen stress. *Journal of Experimental Botany* **66**, 2347-2358.
- Colombi, T., Kirchgessner, N., Le Marie, C., **York, L. M.**, Lynch, J. P., and Hund, A. (2015). Next generation shovelomics: set up a tent and REST. *Plant and Soil* **388**, 1-20.
- Zhang, C., Postma, J. A., **York, L. M.**, and Lynch, J. P. (2014). Root foraging elicits niche complementarity-dependent overyielding in the ancient “three sisters” (maize, bean, squash) polycultures. *Annals of Botany* **114**, 1719-1733.
- Bucksch, A., Burrige, J., **York, L. M.**, Das, A., Nord, E. A., Weitz, J. S., and Lynch, J. P. (2014). Image-based high-throughput field phenotyping of crop roots. *Plant Physiology* **166**, 470–486.
- York, L. M.**, Nord, E. A., and Lynch, J. P. (2013). Integration of root phenes for soil resource acquisition. *Frontiers in Plant Science* **4**:355. doi: 10.3389/fpls.2013.00355.

### **Books and Book Chapters**

- York, L.M.** (2018) Phenotyping Crop Root Crowns: General Guidance and Specific Protocols for Maize, Wheat, and Soybean. In: Ristova D., Barbez E. (eds) *Root Development. Methods in Molecular Biology*, vol 1761. Humana Press, New York, NY.

### **Meeting Abstracts**

- York, L. M.**, Seethepalli, A., Guo, H., Griffiths, M. (2018). RhizoVision-Crown: An open hardware and software phenotyping platform for root crowns using a backlight, a machine vision camera, and a new C++ image analysis program. Oral. Phenome Conference. Tucson, AZ, USA.
- York, L. M.**, Seethepalli, A., Zare, A., Fritschi, F. (2017). A novel multi-perspective imaging platform for phenotyping soybean root crowns in the field increases throughput and separation ability of genotype root properties. Poster. IPG Root Biology Symposium. Columbia, MO, USA.
- York, L. M.** (2017). Functional phenomics: Relating phenes to function using high-throughput phenotyping and data analytics. Poster. Phenome Conference. Tucson, AZ, USA.

- York, L. M.**, Fritschi, F., Bennett, M. J., Foulkes, M. J. (2016). Rhizosphere functional phenomics: Using high-throughput phenotyping to understand root-soil interactions. Oral. ASA, CSSA, SSSA International Meeting. Phoenix, AZ, USA.
- York, L. M.**, Carvalho, P., Russel, J., Foulkes, M. J. (2016). Root phenotyping of barley chromosome substitution lines using X-ray computed tomography. Oral. Society for Experimental Biology Annual Meeting. Brighton, UK.
- York, L. M.**, Carvalho, P., Russel, J., Foulkes, M. J. (2016). Root phenotyping of barley chromosome substitution lines using X-ray computed tomography. Oral. Association of Applied Biologists, Novel Sensors. Nottingham, UK.
- Bennett, M. J., **York, L. M.** (2015). Systems analysis of roots: bridging molecular, rhizosphere, and field scales. Oral. International Society for Root Research. Canberra, Australia.
- York, L. M.**, Keating, S. L., Atkinson, J. A., Johnson, J., Fuente Canto, C., Waugh, R., Russell, J. R., Wells, D. M., Bennett, M. J., Foulkes, M. J. (2015). Root phenes identification and linkage to agronomic utility in cereals using X-ray  $\mu$ CT and field phenotyping. Poster. International Society for Root Research. Canberra, Australia.
- York, L. M.** and John Foulkes. (2015). Integration of root phenes revealed by intensive phenotyping of root system architecture and anatomy. Oral. Monogram Conference. Harpenden, UK.
- York, L. M.**, Malcolm Bennett, John Foulkes, and Lynch, J. P. (2015). Integration of root phenes revealed by intensive phenotyping of root system architecture and anatomy. Poster. European Geosciences Union. Vienna, Austria.
- York, L. M.** and Lynch, J. P. (2013). Nodal root growth angle and number influence nitrogen acquisition in maize (*Zea mays*). Poster. Interdisciplinary Plant Group Symposium. UM. Columbia, MO, USA.
- York, L. M.** and Lynch, J. P. (2012). Nodal root growth angle influences nitrogen acquisition and competition in maize (*Zea mays*). Oral. Ecology Society of America International Meeting. Portland, OR, USA.
- York, L. M.** and Lynch, J. P. (2012). Nodal root growth angle and number influence nitrogen acquisition in maize (*Zea mays*). Poster. ASA, CSSA, SSSA International Meeting. Cincinnati, OH, USA.
- Nord, E. A., **York, L. M.**, Postma, J. A., and Lynch, J. P. (2012). Interaction of root architectural and anatomical phenes in maize. Poster. International Society for Root Research. Dundee, Scotland.
- Postma, J. A., Zhang, C., **York, L. M.**, and Lynch, J. P. (2012). Complementarity in root architecture for nutrient uptake in ancient maize / bean and maize / bean / squash polycultures. Oral. German Society of Plant Nutrition Meeting. Bonn, Germany.
- Nord, E. A., Postma, J. A., **York, L. M.**, and Lynch, J.P. (2011). Synergism of root architectural and anatomical phenes in maize. Oral. ASA, CSSA, SSSA International Meeting. San Antonio, TX, USA.

York, L. M., Henry, A., and Lynch, J. P. (2009). Utility of mixed root architecture stands in changing climates. Poster. Plant Biology Symposium. PSU. University Park, PA, USA.

## INVITED SEMINARS

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- 2018 Invited speaker: Plant Phenome Journal Webinar Series. Online. Jun. 4
- 2017 Invited speaker: International Workshop on Field Phenotyping and Modeling for Cultivation, Tokyo, Japan, Dec. 8
- 2017 Invited speaker: Nagoya University, Japan, Dec. 7
- 2016 Invited speaker: University of Iowa, Ames, IA, Dec. 7
- 2016 Invited speaker: Illinois Ag Masters, Springfield, IL, USA, Dec. 2
- 2016 Invited speaker: Soil Science Society of America, Phoenix, AZ, USA, Nov. 8
- 2016 Seminar speaker: University of Missouri, USA, May 17
- 2016 Seminar speaker: Michigan State University, USA, Feb. 15
- 2015 Keynote speaker: ISRR 9, Canberra, Australia, Oct. 9
- 2014 Seminar speaker: University of Nottingham, UK, Nov. 21

## FELLOWSHIPS, AWARDS, AND HONORS

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- 2016 UK Plant Phenotyping Network Travel Award (£500)
- 2010–2013 Walter Thomas Memorial Scholarship, PSU
- 2010 Root Biology Center Scholarship, South China Agricultural University
- 2009 China Root Biology Fellowship, PSU
- 2008 University Graduate Fellowship and Award for Excellence, PSU

## SERVICE AND OUTREACH

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### Ad Hoc Article Review ([Publons Reviewer Merit: 97](#))

Acta Physiologiae Plantarum, Annals of Botany, Canadian J. of Botany, Functional Plant Biology, J. of Integrative Plant Biology, J. of Experimental Botany, Plant Cell Reports, Plant and Soil, Plant Physiology, New Biotechnology, New Phytologist, Proceedings of the National Academy of Sciences

### Community Service and Outreach

Member of Executive Committee of Root Phenotyping Working Group IPPN, 2017–current  
Coordinated field demos for the UK Plant Phenomics Network meeting, 2016  
[www.rootbiologynews.com](http://www.rootbiologynews.com) to blog about trends in root science, 2013–current  
[@RootBiologyNews](https://twitter.com/RootBiologyNews) on Twitter to tweet about new root research, 2013–current  
Taught R and basic statistics to South African college interns at URBC, 2012–2013  
Wrote *Tech Corner* pieces for PSU Ecology program newsletter, 2012–2014  
Maintained and expanded Lynch lab website ([roots.psu.edu](http://roots.psu.edu)), 2008–2013

Life of Plants badge demonstration for Girl Scouts, The Roots of Plant Growth, 2011

**Institute Service**

Member of Data Management Committee, 2017–

Initiated live streaming and recording of the Research Seminar Series, 2017

Faculty coordinator for Research Seminar Series, 2017–

**PROFESSIONAL AFFILIATIONS**

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Agronomy, Crop Science, and Soil Science Societies of America

American Society of Plant Biologists

International Society of Root Research

National Association of Plant Breeders

Society of Experimental Biology