Jing-Ke Weng
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RESEARCH INTERESTS

Natural product biochemistry, plant abiotic and biotic interactions, carbon sequestration, agricultural biotechnology, food allergy, drug discovery

POSITIONS

2023-present	Inaugural Director, Institute for Plant-Human Interface Professor of Chemistry, Chemical Biology, and Bioengineering Affiliated Professor of Chemical Engineering Northeastern University, Boston, MA
2013-2023	Member, Whitehead Institute for Biomedical Research, Cambridge, MA
2019-2023	Associate Professor of Biology, Massachusetts Institute of Technology, Cambridge, MA
2013-2019	Thomas D. and Virginia W. Cabot Career Development Assistant Professor of Biology, Massachusetts Institute of Technology, Cambridge, MA
2009-2013	Pioneer postdoctoral fellow, Howard Hughes Medical Institute & The Jack H. Skirball Center for Chemical Biology and Proteomics, The Salk Institute for Biological Studies, La Jolla, CA Advisor: Joseph P. Noel

EDUCATION

2003-2009	Ph.D. in Biochemistry, Department of Biochemistry, Purdue University, West Lafayette, IN Advisor: Clint Chapple
1999-2003	B.S. in Biotechnology, *cum laude*, Department of Biotechnology Zhejiang University, Hangzhou, China Advisor: Ji-Zeng Du and Huanxin Weng

HONORS AND AWARDS

2023 World Class Professor of Sepuluh Nopember Institute of Technology (ITS)
2021 Food Allergy Science Initiative Investigator
2021 Purdue University College of Agriculture Distinguished Agriculture Alumni Award
2018 The Smith Family Foundation Odyssey Award
2018 Scialog Fellow of the Research Corporation & the Gordon and Betty Moore Foundation
2016 Beckman Young Investigator Award
2016 Alfred P. Sloan Research Fellow in Computational & Evolutionary Molecular Biology
2016 Buchanan Lecture, UC Berkeley
2015 Searle Scholar
2014 Thomas D. and Virginia W. Cabot Career Development Chair
2014 Pew Scholar in the Biomedical Sciences
2014 American Society of Plant Biologists Early Career Award
2013 Tansley Medal for Excellence in Plant Science
2011 Pioneer Postdoctoral Fellowship
2011 Plant Metabolic Engineering Gordon Research Conference Best Poster Award
2009 PULSe Outstanding Graduate Student in Research Award
2009 PULSe Publication of the Year Award
2009 Bilsland Dissertation Fellowship
2008 Arnold Kent Balls Award for Outstanding Graduate Student in Research
2008 PULSe Travel Award
2007 Beach Travel Award
2005 Phytochemical Society of North America Annual Meeting Best Poster Award

2005 Phytochemical Society of North America Student Travel Award
2003 Lynn Fellowship
2003 Outstanding Undergraduate Researcher Award

PUBLICATIONS

†Co-first authors; *Co-corresponding authors.

1. Liu Y, Hua C, Xu M, Zeng T, Rao J, Zhang Z, Wu R, **Weng JK**, Coley CW, Zheng S. (2026) EnzymeCAGE: a geometric foundation model for enzyme retrieval with evolutionary insights. *Nat Catal*. (In press)
2. Reynolds E, Trauger M, Li FS, Huang J, Moss T, Christ B, Xu M, Knoch E, **Weng JK**. (2026) Elucidation of gene clusters underlying withanolide biosynthesis in ashwagandha through yeast metabolic engineering. *Nat Plants*. (In press, BIORXIV/2024.12.24.630284)
3. Wang R, Manjrekar M, Mahjour B, Avila-Pacheco J, Provenzano J, Reynolds E, Lederbauer M, Mashin E, Goldman SL, Wang M, **Weng JK**, Plata DL, Clish CB, Coley CW. (2025) Neural spectral prediction for structure elucidation with tandem mass spectrometry. (bioRxiv 2025.05.28.656653)
4. Huang W, Reinhardt JK, Tian A, Zhang X, Li B, Gould N, Nallapati S, Ivanov AR, Wang Y, Guo JJ, Budil DE, **Weng JK**. (2025) Cyclochlorotine Hydroxylase CctR Reveals DUF3328 as a Family of Copper-Dependent Metalloenzymes. *Angew Chem Int Ed.* 64:e202512449.
5. Kim CY, Kastner DW, Mitchell AJ, Gutierrez MA, Yao JS, Neumann EN, Kulik HJ, **Weng JK**. (2025) Tracing the stepwise Darwinian evolution of a plant halogenase. *Sci Adv.* 11:eadv6898.
6. Sharma P, Kim CY, Keys HR, Imada S, Joseph AB, Ferro L, Kunchok T, Anderson R, Sun Y, Yilmaz OH, **Weng JK**, Jain A. (2025) A genetically encoded fluorescent reporter for polyamines. *Nat Commun*. 16:4921.
7. Suh EM, Reinhardt JK, **Weng JK**. (2025) The emergence and loss of cyclic peptides in Nicotiana illuminate dynamics and mechanisms of plant metabolic evolution. *Proc Natl Acad Sci U S A*. 122:e2425055122.
8. Kuziel GA, Lozano GL, Simian C, Li L, Manion J, Stephen-Victor E, Chatila T, Dong M, **Weng JK**, Rakoff-Nahoum S. (2025) Functional diversification of dietary plant small molecules by the gut microbiome. *Cell.* 188:1967-1983.
9. Reinhardt JK, Craft D, **Weng JK**. (2025) Toward an integrated omics approach for plant biosynthetic pathway discovery in the age of AI. *Trends Biochem Sci*. 50:311-321.
10. Higgins KW†, Itoigawa A†, Toda Y, Bellott DW, Anderson R, Márquez R*, **Weng JK***. (2025) Rapid expansion and specialization of the TAS2R bitter taste receptor family in amphibians. *PLoS Genet*. 21:e1011533.
11. Torrens-Spence MP†, Matos JO†, Li T†, Kastner DW, Kim CY, Wang Z, Glinkerman CM, Sherk J, Kulik HJ, Wang Y, **Weng JK**. (2024) Mechanistic basis for the emergence of EPS1 as a catalyst in salicylic acid biosynthesis of Brassicaceae. *Nat Commun.* 15:10356.
12. Schwarz NA, Stratton MT, Colquhoun RJ, Manganti AM, Sherbourne M, Mourey F, White CC, Day H, Dusseault MC, Hudson GM, Vickery CR, Schachner HC, Kasprzyk PG, **Weng JK**. (2024) Salidroside and exercise performance in healthy active young adults – an exploratory, randomized, double-blind, placebo-controlled study. *J Int Soc Sports Nutr*. 21:2433744.
13. Simpson JP, Kim CY, **Weng JK**, Dilkes B, Chapple C. (2024) Genome wide association identifies a BAHD acyltransferase activity that assembles an ester of the lipid-derived glucuronosylglycerol and phenylalanine-derived phenylacetic acid. *Plant J*. 118:2169-2187.
14. Ding Q, Guo N, Gao L, McKee M, Wu D, Yang J, Fan J, **Weng JK**, Lei X. (2024) The evolutionary origin of naturally occurring intermolecular Diels-Alderases from *Morus alba*. *Nat Commun*. 15:2492.
15. Kasprzyk PG, Tremaine L, Fahmi OA, **Weng JK**. (2023) *In vitro* evaluation of the potential for drug interactions by salidroside. *Nutrients*. 15:3723.
16. Fallon, TR, Calounova T, Mokrejs M, **Weng JK***, Pluskal T*. (2023) transXpress: a Snakemake pipeline for streamlined de novo transcriptome assembly and annotation. *BMC Bioinform.* 24:133.
17. Kim CY, Mitchell AJ, Kastner DW, Albright CE, Gutierrez M, Glinkerman CM, Kulik HJ, **Weng JK**. (2023) Emergence of a proton exchange-based isomerization and lactonization mechanism in the plant coumarin synthase COSY. *Nat Commun.* 14:597.
18. Edwards A, Njaci I, Sarkar A, Jiang Z, Kaithakottil GG, Moore C, Cheema J, Stevenson CEM, Rejzek M, Novák P, Vigouroux M, Vickers M, Wouters RHM, Paajanen P, Steuernagel B, Moore JD, Higgins J, Swarbreck D, Martens S, Kim CY, **Weng JK**, Mundree S, Kilian B, Kumar S, Loose M, Yant L, Macas J, Wang TL, Martin C, Emmrich PMF. (2023) Genomics and biochemical analyses reveal a metabolon key to β-L-ODAP biosynthesis in Lathyrus sativus. *Nat Commun.* 14:876.

19. Schmid R, Heuckeroth S, Korf A, Smirnov A, Myers O, Dyrlund TS, Bushuiev R, Murray KJ, Hoffmann N, Lu M, Sarvepalli A, Zhang Z, Fleischauer M, Dührkop K, Wesner M, Hoogstra SJ, Mokshyna O, Brungs C, Ponomarov K, Mutabdžija L, Damiani T, Pudney CJ, Earll M, Helmer PO, Rudt E, Fallon TR, Schulze T, Rivas-Ubach A, Bilbao A, Richter H, Nothias LF, Wang M, Orešič M, **Weng JK**, Böcker S, Jeibmann A, Hayen H, Karst U, Dorrestein PC, Petras D, Du X, Pluskal T. (2023) Integrative analysis of multimodal mass spectrometry data in MZmine 3. *Nat Biotechnol.* 41:447-449.
20. Glinkerman CM, Lin S, Ni J, Li FS, Zhao X, **Weng JK**. (2022) Sporopollenin-inspired design and synthesis of robust materials. *Commun Chem*. 5:110.
21. Kersten RD*, Mudy LS, Fallon TR, de Waal F, Chigumba DM, Shafiq K, Wotring JW, Sexton JZ, Medema MH, **Weng JK***. (2022) Gene-guided discovery and ribosomal biosynthesis of moroidin peptides. *J Am Chem Soc*. 144:7686–7692.
22. Park SY, Rao C, Coyte KZ, Kuziel GA, Zhang Y, Huang W, Franzosa EA, **Weng JK**, Huttenhower C, Rakoff-Nahoum S. (2022) Strain-level fitness in the gut microbiome is an emergent property of glycans and a single metabolite. *Cell*. 185: 513-529.
23. Kasprzyk PG, Vickery C, Ye M, Sewastianik M, Gong W, Ding S, Dziwenka M, Mozingo A, Valm K, Schachner H, **Weng JK**. (2022) Safety of a sustainably produced, bioengineered, nature-identical salidroside compound. *Nutrients*. 14:2330.
24. Fujita D, Suzuki R, Fuji Y, Yamada M, Nakama T, Matsugami A, Hayashi F, **Weng JK**, Yagi-Utsumi M, Fujita M. (2021) Protein stabilization and refolding in a gigantic self-assembled cage. *Chem.* 7:2672-2683.
25. **Weng JK***, Lynch JH, Matos JO, Dudareva N*. (2021) Adaptive mechanism of plant specialized metabolism connecting chemistry to function. *Nat Chem Biol.* 17:1037-1045.
26. Qi Y* and **Weng JK***. (2021) Advancing basic plant research and crop improvement through cutting-edge biotechnologies. *Curr Opin Plant Biol*. 60:101999.
27. Torrens-Spence MP, Glinkerman CM, Günther J, **Weng JK**. (2021) Imine chemistry in plant metabolism. *Curr Opin Plant Biol.* 60:101999.
28. Montalbán-López M, Scott TA, Ramesh S, Rahman IR, van Heel A, Viel JH, Bandarian V, Breukink E, Dittmann E, Genilloud O, Goto Y, Burgos MJG, Hill C, Kim S, Koehnke J, Latham J, Link JT, Martínez B, Nair SK, Nicolet Y, Rebuffat S, Sahl HG, Sareen D, Schmidt EW, Schmitt L, Severinov K, Süssmuth RD, Truman A, Wang H, **Weng JK**, van Wezel GP, Zhang Q, Zhong J, Piel J, Mitchell DA, Kuipers OP, van der Donk WA. (2021) New developments in RiPP discovery, enzymology and engineering. *Nat Prod Rep*. 38:130-239.
29. Bessho-Uehara M, Huang W, Patry WL, Browne WE, **Weng JK**, Haddock SHD. (2020) Evidence for de novo biosynthesis of the luminous substrate coelenterazine in ctenophores. *iScience*. 23:101859.
30. Matsumoto T, Harima S, **Weng JK**, Nihei KI. (2020) Systematic approach to the chemical synthesis of arabidopyrones, the unique α-pyrones of Arabidopsis metabolites. *Synth Commun*. 50:2981-2987.
31. Klein IA, Boija A, Afeyan LK, Hawken SW, Fan M, Dall'Agnese A, Oksuz O, Henninger JE, Shrinivas K, Sabari BR, Sagi I, Clark VE, Platt JM, Mrityunjoy Kar M, McCall PM, Zamudio AV, Manteiga JC, Coffey EL, Li CH, Hannett NM, Guo YE, Decker TM, Lee TI, Zhang T, **Weng JK**, Taatjes DJ, Chakraborty A, Sharp PA, Chang YT, Hyman AA, Gray NS, Young RA. (2020) Partitioning of cancer therapeutics in nuclear condensates. *Science.* 368:1386–1392.
32. Cao Y, Lim E, Xu M, **Weng JK**, Marelli B. (2020) Precision delivery of multi-scale payloads to tissue-specific targets in plants. *Adv Sci*. 7:1903551.
33. Torrens-Spence MP, Chiang YC, Smith T, Vicent MA, Wang Y, **Weng JK**. (2020) Structural basis for divergent and convergent evolution of catalytic machineries in plant aromatic amino acid decarboxylase proteins. *Proc Natl Acad Sci U S A*. 117:10806-10817.
34. Kim CY, Mitchell, AJ, Glinkerman CM, Li FS, Pluskal T, **Weng JK**. (2020) The chloroalkaloid (–)-acutumine is biosynthesized via a Fe(II)- and 2-oxoglutarate-dependent halogenase in Menispermaceae plants. *Nat Commun.* 11:1867.
35. Goodheart JA, Minsky G, Brynjegard-Bialik MN, Drummond MS, Munoz JD, Fallon TR, Schultz DT, **Weng JK**, Torres E, Oakley TH. (2020) Laboratory culture of the California Sea Firefly *Vargula tsujii* (Ostracoda: Cypridinidae): Developing a model system for the evolution of marine bioluminescence. *Sci Rep*. 10:10443.
36. **Weng JK**. (2020) How the flame lily synthesizes a therapeutic natural product. *Nature.* 584:49-50.
37. **Weng JK**. (2020) Plant Solutions for the COVID-19 Pandemic and Beyond: Historical Reflections and Future Perspectives. *Mol Plant.* 13:803-807.

38. Xu SY and **Weng JK**. (2020) Climate change shapes the future evolution of plant metabolism. *Adv Genet*. 1:e10022.
39. Jacobowitz J and **Weng JK**. (2020) Exploring uncharted territories of plant specialized metabolism in the postgenomic era. *Annu Rev Plant Biol*. 71:631-658.
40. Pluskal T, Fallon TR, Schmid R, Korf A, Smirnov A, Du X, **Weng JK**. (2020) Metabolomics data analysis using MZmine. in *Processing Metabolomics and Proteomics Data with Open Software*, edited by Robert Winkler, Royal Society of Chemistry. 232-254.
41. Pluskal T, Hoffmann N, Du X, **Weng JK**. (2020) Mass Spectrometry Development Kit (MSDK): a Java library for mass spectrometry data processing. in *Processing Metabolomics and Proteomics Data with Open Software*, edited by Robert Winkler, Royal Society of Chemistry. 399-405.
42. Torrens-Spence MP, Bobokalonova A, Carballo V, Glinkerman CM, Pluskal T, Shen A, **Weng JK**. (2019) PBS3 and EPS1 complete salicylic acid biosynthesis from isochorismate in Arabidopsis. *Mol Plant*. 12:1577-1586.
43. Torrens-Spence MP†, Liu CT†, **Weng JK**. (2019) Engineering new branches of the kynurenine pathway to produce oxo-(2-aminophenyl) and quinoline scaffolds in yeast. *ACS Synth Biol*. 8:2735-2745.
44. Chau Y, Levsh O, Li FS, **Weng JK**. (2019) Exploration of icariin analog structure space reveals key features driving potent inhibition of human phosphodiesterase-5. *Plos One*. 14:e0222803.
45. Levsh O, Pluskal T, Carballo V, Mitchell AJ, **Weng JK**. (2019) Independent evolution of rosmarinic acid biosynthesis in two sister families under the Lamiids clade of flowering plants. *J Bio Chem*. 294: 15193-15205. (Featured cover article)
46. Christ B†, Xu C†, Xu M†, Li FS, Wada N, Mitchell AJ, Han XL, Wen ML, Fujita M, **Weng JK**. (2019) Repeated evolution of cytochrome P450-mediated spiroketal steroid biosynthesis in plants. *Nat Commun.* 10:3206.
47. Cheng J, Song T, Wang H, Zhou X, Torrens-Spence MP, Wang D*, **Weng JK***, Wang Q*. (2019) Production of nonnatural straight-chain amino acid 6-aminocaproate via an artificial iterative carbon-chain-extension cycle*. Metab Eng*. 55:23-32.
48. Pluskal T, Torrens-Spence MP, Fallon TR, de Abreu A, Shi CH, **Weng JK**. (2019) The biosynthetic origin of psychoactive kavalactones in kava. *Nat Plants.* 5:867-878.
49. Jacobowitz J, Doyle WC, **Weng JK**. (2019) PRX9 and PRX40 are extensin peroxidases essential for maintaining tapetum and microspore cell wall integrity during Arabidopsis anther development. *Plant Cell*. 31:848–861. (Featured cover article)
50. Li FS, Phyo P, Jacobowitz J, Hong M, **Weng JK**. (2019) The molecular structure of plant sporopollenin. *Nat Plants*. 5:41-46. (Featured cover article)
51. Zhao Q, Yang J, Cui MY, Liu J, Fang Y, Yan M, Qiu W, Shang H, Xu Z, Yidiresi R, **Weng JK**, Pluskal T, Vigouroux M, Steuernagel B, Wei Y, Yang L, Hu Y, Chen XY, Martin C. (2019) The reference genome sequence of *Scutellaria baicalensis* provides insights into the evolution of wogonin biosynthesis. *Mol Plant*. 12:935-950.
52. Mitchell AJ and **Weng JK**. (2019) Unleashing the synthetic power of plant oxygenases: from mechanism to application. *Plant Physiol*. 179:813-829.
53. Renault H*, Werck-Reichhart D*, **Weng JK***. (2019) Harnessing lignin evolution for biotechnological applications. *Curr Opin Biotechnol*. 56:105-111.
54. Christ B, Pluskal T, Aubry S*, **Weng JK***. (2018) Contribution of untargeted metabolomics for future assessment of biotech crops. *Trends Plant Sci*. 23:1047-1056.
55. Hill M and **Weng JK**. (2018) Pièce de Self-Résistance: A New Paradigm for Natural-Product Herbicide Discovery. *Mol Plant*. 11:1115-1116.
56. Pluskal T and **Weng JK**. (2018) Natural product modulators of human sensations and mood: molecular mechanisms and therapeutic potential. *Chem Soc Rev*. 47:1592-1637. (Featured cover article)
57. Torrens-Spence MP†, Liu CT†, Pluskal T, Chung YK, **Weng JK**. (2018) Monoamine biosynthesis via a noncanonical calcium-activatable aromatic amino acid decarboxylase in psilocybin mushroom. *ACS Chem Biol*. 13:3343-3353. (Featured cover article)
58. Kersten RD* and **Weng JK***. (2018) Gene-guided discovery and engineering of branched cyclic peptides in plants. *Proc Natl Acad Sci U S A*. 115:E10961-E10969.
59. Liou G, Chiang YC, Wang Y, **Weng JK**. (2018) Mechanistic basis for the evolution of chalcone synthase catalytic cysteine reactivity in land plants. *J Bio Chem*. 293:18601–18612.
60. Chiang YC, Levsh O, CK Lam, **Weng JK***, Wang Y*. (2018) Structural and dynamic basis of substrate permissiveness in hydroxycinnamoyltransferase (HCT). *PLoS Comput Biol.* 14:e1006511.

61. Fallon TR†, Lower SE†, Chang CH, Bessho-Uehara M, Martin GJ, Bewick AJ, Behringer M, Debat HJ, Wong I, Day JC, Suvorov A, Silva CJ, Stanger-Hall KF, Hall DW, Schmitz RJ, Nelson DR, Lewis S, Shigenobu S, Bybee SM, Larracuente AM, Oba Y, **Weng JK**. (2018) Firefly genomes illuminate parallel origins of bioluminescence in beetles. *eLife*. 7:e36495.
62. Ban Z, Qin H, Mitchell AJ, Liu B, Zhang F, **Weng JK**, Dixon R, Wang G. (2018) Non-catalytic Chalcone Isomerase-fold Proteins in *Humulus lupulus* are Auxiliary Components in Prenylated Flavonoid Biosynthesis. *Proc Natl Acad Sci U S A*. 115:E5223-E5232.
63. Wada N, Kersten RD, Iwai T, Lee S, Sakurai F, Kikuchi T, Fujita D, Fujita M*, **Weng JK***. (2018) Crystalline Sponge-based Structural Analysis of Crude Natural Product Extracts. *Angew Chem Int Ed*. 57:3671 –3675.
64. Torrens-Spence MP, Pluskal T, Li FS, Carballo V, **Weng JK**. (2018) Complete pathway elucidation and heterologous reconstitution of *Rhodiola salidroside* biosynthesis. *Mol Plant*. 11:205-217.
65. Kersten RD†, Lee S†, Fujita D, Pluskal T, Kram S, Smith JE, Iwai T, Noel JP, Fujita M*, **Weng JK***. (2017) A red algal bourbonane sesquiterpene synthase defined by microgram-scale NMR-coupled crystalline Sponge XRD analysis. *J Am Chem Soc*. 139:16838-16844.
66. Christ B, Hochstrasser R, Guyer L, Francisco R, Aubry S, Hörtensteiner S*, **Weng JK***. (2017) Nonspecific activities of the major herbicide-resistance gene BAR. *Nat Plants.* 3:937–945.
67. Chezem WR, Memon AA, Li FS, **Weng JK**, Clay NK. (2017) SG2-type R2R3-MYB transcription factor MYB15 controls defense-induced lignification and basal immunity in Arabidopsis. *Plant Cell*. 29:1907-1926.
68. Zhao Q, Cui M, Levsh O, Yang D, Liu J, Li J, Hill L, Yang L, Hu Y, **Weng JK**, Chen X, Martin C. (2017) Two CYP82D enzymes function as flavone hydroxylases in the biosynthesis of root-specific 4′-deoxyflavones in *Scutellaria baicelensis*. *Mol Plant*. 11:135–148.
69. Edgar S, Li FS, Qiao K, **Weng JK***, Stephanopoulos G*. (2017) Engineering of taxadiene synthase for improved selectivity and yield of a key taxol biosynthetic intermediate. *ACS Synth Biol*. 6:201-205.
70. Li FS and **Weng JK**. (2017) Rediscovering and demystifying ancient herbal medicines with modern approaches. *Nat Plants*. 3:17109.
71. Torrens-Spence MP†, Fallon TR†, **Weng JK**. (2016) A workflow for studying specialized metabolism in non-model organisms. *Methods Enzymol*. 576:69-97.
72. Al-Wathiqui N†, Fallon TR†, South A, **Weng JK***, Lewis SM*. (2016) Molecular characterization of firefly nuptial gifts: a multi-omics approach sheds light on postcopulatory sexual selection. *Sci Rep*. 6:38556.
73. Levsh O, Chang YC, Tung C, Noel JP, Wang Y*, **Weng JK***. (2016) Dynamic conformational states dictate selectivity toward native substrate in a substrate-permissive acyltransferase. *Biochemistry.* 55:6314-6326.
74. Fallon TR, Li FS, Vicent-Allende M, **Weng JK**. (2016) Sulfoluciferin is biosynthesized by a specialized luciferin sulfotransferase in fireflies. *Biochemistry.* 55:3341–3344.
75. Zhao Q, Zhang Y, Wang G, Hill L, **Weng JK**, Chen XY, Xue H, Martin C. (2016) A specialized flavone biosynthetic pathway has evolved in the medicinal plant, *Scutellaria baicalensis*. *Sci Adv.* 2:e1501780.
76. **Weng JK**, Ye M, Li B, Noel JP. (2016) Coevolution of hormone metabolism and signaling networks expands plant adaptive plasticity. *Cell.* 166:881-893.
77. Fallon TR and **Weng JK**. (2014) A molecular gauge for nitrogen economy in plants. *Cell*. 159:977-978.
78. **Weng JK**. (2014) The evolutionary paths towards complexity: a metabolic perspective. *New Phytol*. 201:1141-1149.
79. **Weng JK**. (2013) Elegant Biochemistry, chaotic origin. *New Phytol*. 200:592-594.
80. **Weng JK** and Noel JP. (2013) Chemodiversity in Selaginella: a reference system for parallel and convergent metabolic evolution in terrestrial plants. *Front Plant Sci*. 4:119.
81. **Weng JK**, Li Y, Mo H, Chapple C. (2012) Assembly of an evolutionarily new pathway for α-pyrone biosynthesis in Arabidopsis. *Science*. 337:960-964.
82. Bonawitz ND, Soltau WL, Blatchley MR, Powers BL, Hurlock AK, Seals LA, **Weng JK**, Stout J, Chapple C. (2012) The REF4 and RFR1 subunits of the eukaryotic transcriptional coregulatory complex Mediator are required for phenylpropanoid homeostasis in Arabidopsis. *J Bio Chem*. 287:5434-5445.
83. **Weng JK** and Noel JP. (2012) The remarkable pliability and promiscuity of specialized metabolism. *Cold Spring Harb Symp Quant Biol*. 77:309-320.

84. **Weng JK**, Philippe RN, Noel JP. (2012) The rise of chemodiversity in plants. *Science*. 336:1667-1670.
85. **Weng JK** and Noel JP. (2012) Structure-function analyses of plant type III polyketide synthases. *Methods Enzymol*. 515:317-335.
86. **Weng JK**, Akiyama T, Ralph J, Chapple C. (2011) Independent recruitment of an *O*-methyltransferase for syringyl lignin biosynthesis in *Selaginella moellendorffii*. *Plant Cell*. 23:2708–2724.
87. Banks JA, Nishiyama T, Hasebe M, Bowman JL, Gribskov M, Depamphilis C, Albert VA, Aono N, Aoyama T, Ambrose BA, Ashton NW, Axtell MJ, Barker E, Barker MS, Bennetzen JL, Bonawitz ND, Chapple C, Cheng C, Correa LG, Dacre M, Debarry J, Dreyer I, Elias M, Engstrom EM, Estelle M, Feng L, Finet C, Floyd SK, Frommer WB, Fujita T, Gramzow L, Gutensohn M, Harholt J, Hattori M, Heyl A, Hirai T, Hiwatashi Y, Ishikawa M, Iwata M, Karol KG, Koehler B, Kolukisaoglu U, Kubo M, Kurata T, Lalonde S, Li K, Li Y, Litt A, Lyons E, Manning G, Maruyama T, Michael TP, Mikami K, Miyazaki S, Morinaga SI, Murata T, Mueller-Roeber B, Nelson DR, Obara M, Oguri Y, Olmstead RG, Onodera N, Petersen BL, Pils B, Prigge M, Rensing SA, Riaño-Pachón DM, Roberts AW, Sato Y, Scheller HV, Schulz B, Schulz C, Shakirov EV, Shibagaki N, Shinohara N, Shippen DE, Sørensen I, Sotooka R, Sugimoto N, Sugita M, Sumikawa N, Tanurdzic M, Theißen G, Ulvskov P, Wakazuki S, **Weng JK**, Willats WW, Wipf D, Wolf PG, Yang L, Zimmer AD, Zhu Q, Mitros T, Hellsten U, Loqué D, Otillar R, Salamov A, Schmutz J, Shapiro H, Lindquist E, Lucas S, Rokhsar D, Grigoriev IV. (2010) The Selaginella Genome Identifies Genetic Changes Associated with the Evolution of Vascular Plants. *Science*. 332:960-963.
88. **Weng JK**, Mo H, Chapple C. (2010) Over-expression of F5H in COMT-deficient Arabidopsis leads to enrichment of an unusual lignin and disruption of pollen wall formation. *Plant J*. 64:898-911. (Featured cover article)
89. Li X, Bonawitz ND, **Weng JK**, Chapple C. (2010) The growth reduction associated with repressed lignin biosynthesis in *Arabidopsis thaliana* is independent of flavonoids. *Plant Cell*. 22:1620-1632.
90. **Weng JK**, Akiyama T, Bonawitz ND, Li X, Ralph J, Chapple C. (2010) Convergent evolution of syringyl lignin via distinct biosynthetic pathways in the lycophyte *Selaginella* and flowering plants. *Plant Cell*. 22:1033-1045. [Highlighted in the Editor's Choice of *Science* 328:406-407 (2010)]
91. **Weng JK** and Chapple C. (2010) The origin and evolution of lignin biosynthesis. *New Phytol*. 187:273-285. [Also featured in “a Virtual Special Issue on Sir Arthur Tansley’s ecosystem concept”. *New Phytol*. 192:561-563 (2011)]
92. Schilmiller AL, Stout J, **Weng JK**, Humphreys J, Ruegger MO, Chapple C. (2009) Mutations in the *cinnamate 4-hydroxylase* gene impact metabolism, growth and development in Arabidopsis. *Plant J*. 60:771-782.
93. **Weng JK**, Li X, Stout J, Chapple C. (2008) Independent origins of syringyl lignin in vascular plants. *Proc Natl Acad Sci U S A*. 105:7887-7892.
94. **Weng JK**, Banks JA, Chapple C. (2008) Parallels in lignin biosynthesis: a study in *Selaginella moellendorffii* reveals convergence across 400 million years of evolution. *Commun Integr Biol*. 1:20-22.
95. Li X, **Weng JK**, Chapple C. (2008) Improvement of biomass through lignin modification. *Plant J*. 54:569-581.
96. **Weng JK**, Li X, Bonawitz ND, Chapple C. (2008) Emerging strategies of lignin engineering and degradation for cellulosic biofuel production. *Curr Opin Biotechnol*. 19:166-172.
97. Weng HX, **Weng JK**, Yan AL, Hong CL, Yong WB, Qin YC. (2008) Increment of iodine content in vegetable plants by applying iodized fertilizer and the residual characteristics of iodine in soil. *Biol Trace Elem Res*. 123:218-228.
98. Weng HX, Sun XW, **Weng JK**, Qing YC, Dong H. (2008) Crucial roles of iron in the growth of *Prorocentrum micans* Ehrenberg (Dinophyceae). *J Coastal Res*. 24:176-183.
99. **Weng JK**, Tanurdzic M, Chapple C. (2005) Functional analysis and comparative genomics of expressed sequence tags from the lycophyte *Selaginella moellendorffii*. *BMC Genomics*. 6:85.
100. Wang W, Tanurdzic M, Luo M, Sisneros N, Kim HR, **Weng JK**, Kudrna D, Mueller C, Arumuganathan K, Carlson J, Chapple C, de Pamphilis C, Mandoli D, Tomkins J, Wing RA, Banks JA. (2005) Construction of a bacterial artificial chromosome library from the spikemoss *Selaginella moellendorffii*: a new resource for plant comparative genomics. *BMC Plant Bio*. 5:10.
101. Weng HX, Qin YC, **Weng JK**. (2005) Inherent correlation between decreased marine sedimentary phosphorus and glacial atmospheric CO_2 decline. *Geophys Res Lett.* 32: L18606.

102. Weng HX, **Weng JK**, Yong WB, Sun XW, Zhong H. (2003) Capacity and degree of iodine absorbed and enriched by vegetable from soil. *J Environ Sci*. 15:107-111.
103. **Weng JK**. (1996) A visit to the San Francisco Exploratorium. *Family Education*. 10:33. (in Chinese)

PATENTS

1. Kersten RD and **Weng JK**. Ribosomal biosynthesis of moroidin peptides in plants. (WO2023097301A2)
2. Ding S, Chau Y, Wirth JDS, Xu T, **Weng JK**. Ivacaftor glycosides, methods of making, and uses thereof in treating cystic fibrosis. (WO2021188459A1)
3. Ding S, Chau Y, Wirth JDS, Xu T, **Weng JK**. Etoposide glycosides, methods of making, and uses thereof as an anti-cancer drug. (WO2021188457A1)
4. Ding S, Chau Y, Wirth JDS, Xu T, **Weng JK**. Enasidenib glycosides and methods of treating diseases associated with isocitrate dehydrogenase (idh) dysfunction. (WO2021188456A1)
5. Chau Y, Li FS, **Weng JK**. Analogs of the natural product icariin. (WO2020033498A1)
6. Kersten RD and **Weng JK**. A biosynthetic approach for heterologous production and diversification of bioactive cyclic peptides. (WO2019144083A1)
7. Pluskal T and **Weng JK**. Enzymatic synthesis of kavalactones and flavokavains. (US10941429B2)
8. Torrens-Spence MP and **Weng JK**. Compositions and methods for production of salidroside, icariside D2, and precursors of salidroside and icariside D2. (US2019264221A1)
9. Christ B and **Weng JK**. Modified bialaphos resistance acetyltransferase compositions and uses thereof. (US2019249188A1)

INVITED TALKS

2026 Interdisciplinary Program in Genetics and Genomics, Texas A & M University, College Station, TX (scheduled)
The Southern Section American Society of Plant Biologists Annual Meeting, Lafayette, LA (Keynote speaker, scheduled)
Department of Chemistry & Biochemistry, UC Santa Barbara, Santa Barbara, CA (scheduled)
The ADA Forsyth Institute, Boston, MA (scheduled)
Department of Botany and Plant Sciences, UC Riverside, Riverside, CA (scheduled)
Food Allergy Gordon Research Conference, Ventura, CA

2025 The Second International Plant Spatio-Temporal Omics Research Conference, Beijing, China (Keynote speaker)
MITalk, MIT CSSA, Cambridge, MA
Collaborative Development of Innovation Drugs Forum, Cambridge, MA (Keynote speaker)
Institute of Organic Chemistry and Biochemistry, Prague, Czech Republic
Metabolomics 2025, Prague, Czech Republic (Keynote speaker)
Symposium on Plant Metabolism, Department of Chemical Biology, Peking University, Beijing, China (Keynote speaker)
EMBO Workshop on Integrating cell and planetary scales to address climate resilience, Lisbon, Portugal

2024 College of Sciences, Shanghai Normal University, Shanghai, China
The 5th International Conference on Plant Metabolism, Sanya, China (Plenary speaker)
Department of Chemistry, The University of Hong Kong, Hong Kong
Davis Museum at Wellesley College, Wellesley, MA
Drug and Disease Discovery D3 Research Center, University of Kentucky (Virtual)
The 2st International Conference on RiPPs, Seoul, South Korea
MIT Technology Review Innovators Under 35 Asia Pacific Award Ceremony, Shanghai, China (Keynote speaker)
Bayer Crop Science, Chesterfield, MO
Symposium on Evidence-based integrative health for allergy and inflammation: Clinical Practice, Science, & Technology, New York Medical College (Virtual)
Phytochemical Society of North America Annual Meeting, Monterrey, Mexico (Keynote speaker)
Food Allergy Science Initiative Annual Symposium, Cambridge, MA
The 2024 Global Rare Diseases Research Symposium & The Second China Rare Diseases Research and Translational Medicine Annual Conference (Virtual)
Merrimack College, North Andover, MA

Department of Plant Biology, Rutgers University, New Brunswick, NJ
Interdisciplinary Plant Group, University of Missouri, Columbia, MO
Discover BMB 2024, San Antonio, TX
Synthetic Biology Young Speaker Series (SynBYSS) (Virtual)

2023 International Symposium on Agricultural and Plant Synthetic Biology, Shenzhen, China (Plenary speaker, virtual)
The 59th Symposium on Phytochemistry in Japan, Tokyo, Japan
Graduate School of Pharmaceutical Sciences, University of Tokyo, Tokyo, Japan
Sociedad Mexicana de Bioquímica National Plant Biochemistry and Molecular Biology Congress, Oaxaca, Mexico
Department of Chemical and Biological Engineering, Hong Kong University of Science and Technology, Hong Kong, China
The 28th CBA Annual Conference "Accelerate Drug Development through Scientific Innovation, Regulatory Convergence, and Global Partnership", Gaithersburg, MD
Department of Biochemistry, National University of Singapore, Singapore
Plant Biology 2023, Savannah, GA
Synthetic Biology Gordon Research Conference, Sunday River, ME
Department of Chemistry, ITS, Surabaya, Indonesia
Department of Molecular Biophysics and Biochemistry, Yale University, New Haven, CT

2022 LabLinks symposium on Biocatalysis, Boston College, Newton, MA
Department of Biochemistry, Purdue University, West Lafayette, IN
Department of Biochemistry, Michigan State University, East Lansing, MI
Department of Cellular and Molecular Biology, University of Michigan, Ann Arbor, MI
John Innes Centre, Norwich, UK
Leibniz Institute of plant Biochemistry, Halle, Germany (virtual)
Symposium on Dynamic Molecular Interactions in Plant Biology, University of Copenhagen, Copenhagen, Denmark
PhD Workshop of the Natural Products Section of the German Society for Plant Sciences (virtual)
Biology Colloquia Series, Northeastern University, Boston, MA
Institute for Integrative Genome Biology, UC Riverside, Riverside, CA (virtual)

2021 MPlant Virtual Seminar (virtual)
5th International Conference on Plant Synthetic Biology, Bioengineering and Biotechnology (keynote speaker, virtual)
The 59th Annual Meeting of the Phytochemical Society of North America, Kelowna, British Columbia, Canada (keynote speaker, virtual)
7th East-West Integrative Medical Symposium for Immunology & Wellness – Clinical Practice, Science, & Technology (virtual)
Symposium on Biosynthesis of Plant Natural Products and Synthetic Biology for Their Production, co-organized by Chinese Academy of Chinese Medical Sciences, China and Chalmers University of Technology, Sweden (keynote speaker, virtual)
College of Pharmacy, University of Utah, Salt Lake City, UT (virtual)
Activate Eco, Harvard Business School, Cambridge, MA (virtual)
Directing Biosynthesis, Royal Society of Chemistry (keynote speaker, virtual)
Department of Biochemistry, Purdue University, West Lafayette, IN (virtual)
Department of Biological Sciences and Botanic Gardens, Wellesley College, Wellesley, MA (virtual)

2020 The 2nd China National Conference on Metabolic Biology, Haikou, China (virtual)
Bogor Agricultural University and Sepuluh Nopember Institute of Technology, Indonesia (virtual)
High Value Biorenewables (HVB) Network, UK (virtual)
Applied Pharmaceutical Chemistry annual meeting, Cambridge, MA (virtual)
Plant Biology Seminar Series, Pennsylvania State University, University Park, PA (virtual)
Department of Pharmacology, Capital Medical University, Beijing, China (virtual)
Workshop on Biotechnology and Carbon Removal, Cambridge, MA (virtual)
Cambridge University Biological Society, UK (virtual)
Inari Agriculture, Cambridge, MA (virtual)

2019 Department of Bioengineering, Stanford University, Palo Alto, CA

Plant Synthetic Biology Workshop, UC San Diego, San Diego, CA
Beckman Symposium, Irvine, CA
5th East and West Integrative Medicine Science and Practice Symposium for Allergy and Wellness, New York Medical College, Valhalla, NY
Plant Metabolic Engineering Gordon Research Seminar (keynote speaker), Lucca, Italy
Plants of the Future Conference, New York University, New York City, NY
The Future of Health Technology Summit, Cambridge, MA
The 1st International Conference on RiPPs, Granada, Spain
BioFrontiers seminar series, Department of Biochemistry, University of Colorado, Boulder, CO
Department of Biochemistry and Molecular Biology, University of Massachusetts, Amherst, MA
Department of Biochemistry, Brandeis University, Waltham, MA
Department of Biochemistry & Biophysics, Texas A & M University, College Station, TX

2018 UNT-PDA Annual Symposium (keynote speaker), University of North Texas, Denton, TX
13th International Conference on Genomics, Shenzhen, China
The Quarter Century Celebration of Boston Biotech Biology Association Symposium, Boston, MA
Department of Chemistry, Purdue University, West Lafayette, IN
Molecular Structure Elucidation Gordon Research Conference, Newry, ME
The 43rd International Conference on Coordination Chemistry, Sendai, Japan
Institute of Plant Molecular Biology, Centre National de la Recherche Scientifique (CNRS), University of Strasbourg, Strasbourg, France
Adventure Innovation, Google, Cambridge, MA
Planetary Biology Connections, Carnegie Institution for Science, Washington, D.C.
Searle Scholar meeting, Chicago, IL
Pew Scholar meeting, Dove Mountain, AZ
Umeå Plant Science Centre, Umeå University, Sweden

2017 Food Allergy Science Initiative Symposium, Broad Institute, Cambridge, MA
MIT ILP Executive Briefing, Cambridge, MA
Whitehead Colloquium, Cambridge, MA
Metabolomics Tech Summit at Weill Cornell, New York City, NY
Conagen, Bedford, MA
Silk Road International Life Science Forum, Yinchuan, China
Department of Chemical Engineering, Tsinghua University, Beijing, China
Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China
Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, Tianjin, China
Center for Synthetic Biology, Chongqing University, Chongqing, China
The 4th International Conference on Plant Metabolism, Dalian, China
Plant Metabolic Engineering Gordon Research Conference, Waterville Valley, NH
MIT-Educator Program, Cambridge, MA
28th International Conference on Arabidopsis Research, St. Louis, MO
College of Life Sciences, Zhejiang University, Hangzhou, China
China National Gene Bank, Shenzhen, China
Leading Edge Lecture Series, Beckman Research Institute at City of Hope, Duarte, CA
18th Annual Plant Biology Minisymposium, University of Maryland, College Park, MD
3rd East and West Integrative Medicine Science and Practice Symposium for Allergy and Wellness, Icahn School of Medicine at Mount Sinai, New York City, NY
Whitehead Symposium, New York City, NY
School for Integrative Plant Sciences, Cornell University, Ithaca, NY

2016 Biochemistry & Molecular Biology Colloquium Series, Michigan State University, East Lansing, MI
11th International Conference on Genomics, Shenzhen, China
College of Life Sciences, Zhejiang University, Hangzhou, China
Second Institute of Oceanography, State Oceanic Administration, Hangzhou, China
2nd East and West Integrative Medicine Science and Practice Symposium for Allergy and Wellness, Icahn School of Medicine at Mount Sinai, New York City, NY
Department of Genetics, Yale School of Medicine, New Haven, CT
The Inaugural NTU Plant Sciences Symposium (keynote speaker), School of Biological Sciences, Nanyang Technological University, Singapore
Bob B. Buchanan lecture, Department of Plant and Microbial Biology, UC Berkeley, CA

Molecular Structure Elucidation Gordon Research Conference, West Dover, VT
MIT-Educator Program, Cambridge, MA
The 32nd annual meeting of the International Society of Chemical Ecology, Iguazu Falls, Brazil
MIT ILP Executive Briefing, Cambridge, MA
Flagship Ventures, Cambridge, MA
The Future of Health Technology Summit, Cambridge, MA
Harvard Medical School, Boston, MA
Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs, CT

2015 MIT Annual Research and Development Conference, Cambridge, MA
TEDx Beacon Street, Boston, MA
DSM Nutritional Products Microbia Inc, Lexington, MA
13th Annual Symposium in Plant Biology (keynote speaker), University of Massachusetts, Amherst, MA
MIT Collaborative Initiatives New Models 7, Cambridge, MA
Next Generation Pteridology, Smithsonian National Museum of Natural History & United States Botanic Garden, Washington D.C.
Beijing Biomedicine Summit (keynote speaker), Beijing, China
The Northeast Section American Society of Plant Biologists Annual Meeting (keynote speaker), Boston, MA
Natural Products Affinity Group Ten-Year Anniversary, UCSD, San Diego, CA
The Broad Institute Gene Circuits LabLinks Symposium, Cambridge, MA
Pew Scholar meeting, Vieques, PR

2014 The Future of Chemistry in Chemical Ecology Symposium, Max Planck Institute for Chemical Ecology, Jena, Germany
Harvard University Herbaria, Cambridge, MA
Department of Biology, Boston University, Boston, MA
PULSe Ten-Year Anniversary Celebration (keynote speaker), Purdue University, West Lafayette, IN
Center of Excellence for Dynamic Molecular Interactions, University of Copenhagen, Copenhagen, Denmark
Plants in New England (PINE) Symposium, Cambridge, MA
Special presentation with Whitehead Institute, New York City, NY
EITA Conference on New Media and Biomedical Research, Cambridge, MA
New Phytologist Next Generation Scientist, John Innes Centre, Norwich, UK
Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China
South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, China
The 3rd International Conference on Plant Metabolism, Xiamen, China
School of Life Sciences, Xiamen University, Xiamen, China
The Future of Health Technology Summit, Cambridge, MA

2013 Natural Products Affinity Group seminar series, San Diego, CA
The Donald Danforth Plant Science Center, St. Louis, MO
Department of Molecular, Cellular and Developmental Biology, Yale University, New Haven, CT
Green Center for Systems Biology, UT Southwestern, Dallas, TX
College of Biological Sciences, UC Davis, Davis, CA
Division of Biological Sciences, UC San Diego, San Diego, CA
Whitehead Institute for Biomedical Research, Cambridge, MA
Department of Biochemistry, Purdue University, West Lafayette, IN
Department of Biochemistry, UCLA, Los Angeles, CA

2012 77th Cold Spring Harbor Symposium on Quantitative Biology: The Biology of Plants, Cold Spring Harbor, NY

2011 Natural Products Affinity Group seminar series, San Diego, CA

2010 Banff Conference on Plant Metabolism, Banff, Canada
Plant and Animal Genome XVIII Conference, San Diego, CA

2009 Plant Cell Walls Gordon Research Conference (keynote speaker), Smithfield, RI

2007 American Society of Plant Biologists Annual Meeting, Chicago, IL
Plant and Animal Genome XV Conference, San Diego, CA

OTHER OUTREACH ACTIVITIES

2025 Panelist, Susan Heideman's art exhibit at Laconia Gallery, Boston, MA
Panelist, 2025 Harvard Science Research Conference, Cambridge, MA
Speaker, Fellow roundtable discussion at the 3rd AYSF annual conference, Hong Kong
Panelist, AI & Life Sciences, NECINA Annual Conference, Waltham, MA
Panel moderator at the CBA-NE biotech career workshop, Boston, MA
Panel moderator, EMBO Workshop on Integrating cell and planetary scales to address climate resilience, Lisbon, Portugal

2024 Speaker and moderator, Leadership workshop at the 2nd AYSF annual conference, Hong Kong
Panel moderator at the 1st CBA-NE annual conference, Waltham, MA
Panelist, SCBA-BBB biotech entrepreneurship panel, Boston, MA
Panel moderator at the 1st CBA annual meeting in Suzhou, China
Speaker, career panel, CBA New England Chapter
Podcast guest, Curiously

2023 Panel moderator at the opening keynote session of Cell Bio 2023, Boston
Panel moderator at the Inaugural AYSF Annual Conference, Hong Kong
Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area

2022 Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area
Speaker, Whitehead Institute's Spring Lecture Series for High School Students, The Rising Impact of Climate Change on Human Health

2021 Panelist, Whitehead Institute Director's Dialogue: Using Fundamental Biology to Counter Climate Change
Speaker, Whitehead Institute's Spring Lecture Series for High School Students

2020 Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area (virtual)
Moderator, YOSIA webinar on AI + Chemistry and drug discovery

2019 Host of MassBioEd's Career Exploration Day for high school students and teachers from Kennedy Academy at Whitehead Institute
Lecturer, Science for the Public Lecture Series
Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area (Two repeated sessions)
Lecturer, YOSIA webinar on synthetic chemistry vs. synthetic biology
Lecturer, Whitehead Institute Spring into Science lecture series for the Cambridge community
Primary narrator for featured documentary "The Science Behind Traditional Chinese Medicine", LAGP Films
Host of one-day field trip to Whitehead Institute for high school students from Acton-Boxborough Regional High School, Acton, MA

2018 Panelist, MassBioEd's Career Exploration Day for students from Revere High School
Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area (Two repeated sessions)
Host of one-day field trip to Whitehead Institute for high school students from Acton-Boxborough Regional High School, Acton, MA
Panelist, Science and Society Town Hall, Carnegie Institution for Science, Washington, D.C.

2017 Speaker, MassBioEd's Career Exploration Day for students from Essex Technical High School
Panelist, "Food Evolution" panel discussion at Coolidge Corner theater, Brookline, MA
Host of "A day with plants" during the Whitehead Institute summer science program (Expedition: Bio) for middle school students from the greater Boston area (Three repeated sessions)
Host of one-day field trip to Whitehead Institute for high school students from Acton-Boxborough Regional High School, Acton, MA

2016 Guest Scientist at “Science by the Pint” to discuss general topics related to GMO with the general public, Aeronaut Brewery, Somerville, MA
Host of “Exploring the Amazing Plant World” during the Whitehead Institute summer science program (CampBio) for middle school students from the greater Boston area (Three repeated sessions)
Panelist, "The Nuts and Bolts of the Academic Job Search" panel discussion, MIT Graduate Student Council (GSC), Cambridge, MA
Seminar and career discussion with 2nd – 4th graders at Birches School, Lincoln, MA
Host and speaker at the outreach dinner event “Our Dinner Table: The Intersection of Food & Health”, Cambridge, MA (Event co-hosted by Community Servings and the Whitehead Institute)
Seminar and career discussion with high school students at the Cambridge Rindge and Latin School, Cambridge, MA

2015 Speaker, MassBioEd’s Career Exploration Day for local high school students.
Lecturer, The Science behind Biotech Breakthroughs, Whitehead Seminar Series for High School Teachers, Cambridge, MA
Host of “Biology in Ecology” during the Whitehead Institute summer science program (CampBio) for middle school students from the greater Boston area (Three repeated sessions)
Moderator for panel discussion on “The Safety of Genetically Modified Foods” during the Whitehead Institute spring lecture series for high school students

2014 Host of “Plant Biology Day: Seed for Tomorrow” during the Whitehead Institute summer science program (CampBio) for middle school students from the greater Boston area (Three repeated sessions)
Panelist, “Search for faculty positions” panel discussion, Independent Activities Period (IAP), MIT, Cambridge, MA
Host of one-day field trip to MIT and Whitehead Institute for high school students from Tabor Academy, MA

TEACHING

2025-present	Northeastern	BIOE 5760	Method and Logic in Systems Biology and Bioengineering
2025-present	Northeastern	CHEM 5620	Protein Chemistry
2020-2023	MIT	7.546/15.480/20.586	The Science and Business of Biotechnology
2017-2021	MIT	7.015	Introductory Biology
2020-2021	MIT	7.003	Molecular Biology Laboratory
2016-2018	MIT	7.41/7.73	Principles of Chemical Biology
2015-2017	MIT	7.15	Experimental Molecular Genetics
2017	Zhejiang University		Introduction to Life Sciences (guest lecturer)
2016	MIT	7.50	Method and Logic in Molecular Biology (guest lecturer)
2014	MIT	7.89	Topics in Comp & Sys Biology (guest lecturer)
2006	Purdue University	BCHM 307	Biochemistry (teaching assistant)

MENTORING

2013-present Northeastern University, Whitehead Institute, and MIT

Postdocs

Current (6): Matthew Hill (2025-present), Jakob Reinhardt (2024-present), Stefano Rosa (2024-preseent), Corina Simian (2019-present), Yulin Sun (2022-present), Menglong Xu (2019-present)

Completed (12): Bastien Christ (2015-2018, SNF postdoctoral fellow, Current: Project Leader, Lonza), Ilias El Houari (2022-2023, Current: Policy Advisor, Flemish Government), Chris Glinkerman (2018-2022, Current: Founder, DELphinex), Roland Kersten (2015-2019, LSRF postdoctoral fellow, Current: Assistant Professor, University of Michigan), Fu-Shuang Li (2014-2019, Current: Senior Research Scientist, Northeastern University), Tomoya Kanda (2021-2023, Current: Assistant Professor, Institute for Molecular Science, Japan), Jason Matos (2019-2025, Assistant Professor, Emmanuel College), Michelle McKee (2020-2022, Current: Scientist, Ayana Bio), Andrew Mitchell (2017-2019, Current: Scientist, Moderna), Tomáš Pluskal (2015-2020, HHWF postdoctoral fellow, Current position: Group Leader, Institute of Organic Chemistry and

Biochemistry of the Czech Academy of Sciences), Michael Torrens-Spence (2014-2020, Current: Associate Technical Director, Ginkgo Bioworks), Chengchao Xu (2016-2020, HFSP postdoctoral fellow, Current: Group Leader, China Academy of Chinese Medical Sciences)

PhD students

Current (6): Sukhjivan Binning (2023-present), Elliott Guido (2023-present), Charlie Huh (2025-present), Sophia Koleva (2025-present), Mitchell Thomas (2025-present), Marena Trauger (2023-present)

Completed (11): Yasmin Chau (Ph.D. 2019, MIT Biology, Current: Senior Research Scientist, Northeastern University), Timothy Fallon (Ph.D. 2019, MIT Biology, Current: Postdoc, UCSD), Kate Higgins (Ph.D. 2024, Current: MD student, Harvard Medical School), Matthew Hill (Ph.D. 2025, Current: Postdoc, Northeastern University), Wentao Huang (Ph.D. 2025, Current: Scientist, Nabsys), Joseph Jacobowitz (Ph.D. 2020, MIT Biology, Current: Scientist, Merida Biosciences), Colin Kim (Ph.D. 2023, MIT Biological Engineering, Current: Postdoc, Harvard University), Olesya Levsh (Ph.D. 2018, MIT Biology, Current: Director of Competitive Intelligence, Cullinan Therapeutics), Geoffrey Liou (Ph.D. 2019, MIT Biology, Current: Chief Technology Officer, Symbiobe), Erin Reynolds (Ph.D. 2025, Current: Postdoc, University of Pittsburg), Sophia Xu (Ph.D. 2023, Current: Scientist, Robigo)

Undergraduate and master students (research mentoring)

Current (13): Shai Adams (UROP, Northeastern University, 2024-present), Jade Dai (UROP, Northeastern University, 2025-present), Amrin Jenny (UROP, Northeastern University, 2024-present), Sophia Kolodney (UROP, Northeastern University, 2025-present), Jeffery Lafrance (UROP, Northeastern University, 2025-present), Natalie Loh (UROP, Northeastern University, 2025-present), Eva McCullough (UROP, Northeastern University, 2025-present), Romaa Naveen (UROP, Northeastern University, 2025-present), Mohammed Sharukh (MS student, Northeastern University, 2025-present), Mark Teh (UROP, Northeastern University, 2023-present), Robert Weinberg (MS student, Northeastern University, 2025-present), Haruka Weir (UROP, Northeastern University, 2025-present), Ce Xiao (MS student, Northeastern University, 2025-present)

Completed (40): Claire Albright (Undergraduate researcher, Wheaton College, 2019-2020), Maria Vicent Allende (Williams College, 2015 Williams-Whitehead Summer Internship Program), Anastassia Bobokalonova (UROP, MIT, 2014-2016), Reese Caliman (UROP, MIT, 2018-2019), Isabelle Chambers (UROP and Co-op, Northeastern University, 2024-2025), Sean Clarke (UROP, Northeastern University, 2023), Alex Yin-Kwan Chung (The Hong Kong University of Science and Technology, 2017 Summer Internship), Andrea De Abreu (UROP, MIT, 2016-2017), Ido Dinnar (Brandies University, 2021 Summer undergraduate researcher), Willian Doyle (Williams College, 2017 Williams-Whitehead Summer Internship Program), Drake Dunaway (UROP, Northeastern University, 2024-2025), Jeandele Elliot (Howard University, 2019 MIT Summer Research Program), Lucas Fine (UROP, Northeastern University, 2025), Fanqi (QeeQee) Gao (UROP, MIT, 2015), Thomas Gate (University of Oxford, Laidlaw Undergraduate Research and Leadership Fellow, 2018 Summer), Edoardo Gianni (University College London, 2016 Summer internship), Maya Gregor (University of Toronto, 2025 summer), Uriel Garcia (Williams College, 2019 Williams-Whitehead Summer Internship Program), Morgan Guempel (UROP, MIT, 2023), Michael Gutierrez (Boston College, 2018-2019), Matthew Hill (Purdue University, 2016 Summer Internship), Jonathan Huang (UROP, MIT Biology, 2022-2023), Maya Huffman (Williams College, 2020 Williams-Whitehead Summer Internship Program), Vehaan Keswani (UROP, Northeastern University, 2024-2025), Eleane Lema (UROP, MIT, 2019-2020), Brian Levine (Williams College, 2014 Williams-Whitehead Summer Internship Program), Chun-Ting Liu (UROP, MIT, 2017-2019), Trevor Moss (UROP, Boston University, 2024), Lauren Piasecki (UROP, Northeastern University, 2025), Paul Schwein (UROP, MIT, 2015-2016), Kaitlyn Shaver (UROP, Northeastern University, 2024-2025), Amber Shen (UROP, MIT, 2019), Cindy Shi (MIT, 2017 summer UROP), Alberto Sofra (UROP, Case Western Reserve University, 2020-present), Anru Tian (UROP, MIT, 2020-2022), Sheena Vasquez (Georgia Perimeter College, 2014 HHMI-MIT Summer Research Program), George Yacoub (Williams

College, 2019 Williams-Whitehead Summer Internship Program), Jocelyn Yao (UROP, MIT, 2019-2020), Amy Zhang (UROP, MIT, 2014), Vivian Zhong (UROP, MIT, 2018-2019)

Undergraduate students (academic advising at MIT)

Completed (18): Andrea De Abreu (course 7-8, 2015-2019), Ricardo Albino (course 6-7, 2015-2018), Yun Boyer (course 6-7, 2017-2019), Hieu Dinh (course 6-7, 2020-2022), Erick Eguai (course 7, 2020-2022), Andrew Feng (course 7, 2020-2023), Julia Grim (course 6-7, 2019-2023), Karen Gu (course 6-7, 2017-2020), George Hartoularos (course 7, 2014-2016), Josh Lian (course 5-7, 2022-2023), Chun-Ting Liu (course 5-7, 2019-2020), Stephen Lostetter (course 7, 2019-present), Sahithi Madireddy (course 7, 2020-2023), Jorge Perez (course 6-7, 2019-2021), Zachary Prewitt (course 5-7, 2020-2023), Miguel Aguilar Ramos (course 5-7, 2017-2020), Venkatesh Sivaraman (course 6-7, 2017-2020), Jacqueline Xu (course 6-7, 2014-2016)

Visiting scientists (7): David Craft (HMS and MGH, 2024-present), Daishi Fujita (University of Tokyo, Japan, 2017-2020), Lea Gram Hansen (University of Copenhagen, Denmark, 2016), Azam Noori (Merrimack College, 2025), Cecilia Ruibal (Universidad de la República, Uruguay, 2014), Naoki Wada (University of Tokyo, Japan, 2018), Menglong Xu (Zhejiang University, 2017-2019)

2009-2013 Salk Institute

Graduate students (3)

Jonathan Hetzel, Helena Sun, Christopher Vickery

2005-2009 Purdue University

Undergraduate students (3)

Kevin Donohue, Yongxiang Hu, Claire Goldsbrough

Graduate students (4)

Tara Anderson, Nicolas Anderson, Elizabeth Buescher, Yi Li

THESIS COMMITTEE

Current (6): Bakar Abbasi (Ph.D. candidate, Northeastern CCB, 2025-present), Arezou Dilmaghanimarand (Ph.D. candidate, Northeastern CCB, 2025-present), Wei-Ting Chang (Ph.D. candidate, Northeastern CCB, 2024-present), Bethany Laatsch (Ph.D. candidate, Northeastern CCB, 2025-present), Gabriel Russell (Ph.D. candidate, Yale Immunobiology, 2022-present), Alexa Voorhis (Ph.D. candidate, Northeastern CCB, 2025-present)

Completed (24): Spencer T. Adams Jr. (Ph.D. 2020, University of Massachusetts Medical School, Biochemistry and Molecular Pharmacology), Jessie Berta-Thompson (Ph.D. 2015, MIT Microbiology), Yoon Andrew Cho-Park (Ph.D. 2021, MIT Biology), Andres Cubillos-Ruiz (Ph.D. 2015, MIT Microbiology), Christopher Dawson (Ph.D. 2020, MIT Biology), Steven Edgar (Ph.D. 2016, MIT Chemical Engineering), Sonya Entova (Ph.D. 2019, MIT Biology), Emerson Glassey (Ph.D. 2021, MIT Biological Engineering), Samuel Goldman (Ph.D. 2023, MIT Chemical Engineering), Tedrick Thomas Salim Lew (Ph.D. 2020, MIT Chemical Engineering), Sora Kim (Ph.D. 2022, MIT Biology), Zhaoqi Li (Ph.D. 2020, MIT Biology), Xiaoxiao Ma (Ph.D. 2017, Beckman Research Institute at City of Hope), Conor McClune (Ph.D. 2019, MIT Biology), Nadia Mirza (Ph.D. 2014, University of Copenhagen, Molecular Plant Biology), Ben Morehouse (Ph.D. 2017, Brandeis University, Biochemistry), Essicka Andrea García Saldaña (Master of Science 2022, INECOL), Robert Saxton (Ph.D. 2018, MIT Biology), Mark Sullivan (Ph.D. 2019, MIT Biology), Levi Teitz (Ph.D. 2018, MIT Biology), Tyler Toth (Ph.D. 2022, MIT Biological Engineering), Jernej Turnšek (Ph.D. 2019, Harvard University, Biological and Biomedical Sciences), Jacob Wirth (Ph.D. 2019, Brandeis University, Biochemistry), Xiaoqian Yu (Ph.D. 2019, MIT Biological Engineering)

OTHER PROFESSIONAL ACTIVITIES

2025-present Member, Advisory Board, *Molecular Plant* and *Plant Communications*
2025 Co-Chair of the 2025 Gordon Research Conference on Plant Metabolic Engineering
2024-present Member, Editorial Board, *Science Advances*
2023-present Judge, MIT Technology Review's Innovators Under 35 of China
2023-present Member, Board of Directors, Chinese Biopharmaceutical Association New England (CBA-NE) Section

2023-present Member, Advisory Board, *New Phytologist*
2023-2024 Member, Scientific Advisory Board, Montai Health
2022-present Co-Founder and Steering Committee member, Asian Young Scientist Fellowship (AYSF)
2022 Co-organizer of the "Securing the Future of Agriculture" symposium, Cambridge, MA
2021-present Mentor, Salk alumni postdoctoral trainee mentoring program
2018-present Member, Editorial Board, *Trends in Biochemical Sciences*
2017-present Member, Editorial Board, *The Plant Cell*
2014-present Guest editor for *eLife* and *Current Opinion in Plant Biology*
2014-present *Ad hoc* reviewer for grant and project proposals
Carbon Technology Research Foundation (2023), New Cornerstone Investigator Program (2022, 2023), U.S. Department of Agriculture (NIFA 2019, 2020, 2021, 2022, 2023, 2024), U.S. Department of Energy (BER 2019), U.S. National Science Foundation (CHE 2018, MCB 2019, MCB 2020, DEB 2021), University of Strasbourg Institute for Advanced Study (2017), Taylor & Francis Group (2014), Charles A. King Trust Postdoctoral Fellowship (2014), and United States-Israel Binational Science Foundation (2014)
2019-present Member, Scientific Advisory Board, Galixir
2017-present Co-Founder and Board Director, DoubleRainbow Biosciences
2016-present Member, Scientific Advisory Board, Inari Agriculture
2016-2019 Member, Scientific Advisory Board, BGI
2014-2016 Member, Scientific Advisory Board, Phylos Bioscience
2014-present Member, Advisory Board, Harvard Medical School - Chinese Scholars and Scientists Association (HMS-CSSA)
2018 MIT Biology IAP faculty coordinator
2013 Co-Chair of the 2013 Gordon Research Seminar on Plant Metabolic Engineering
2011-2013 Editorial Board, ISRN Botany
2008-2011 Curator for the Selaginella genome project
2007-present Guest Editor for peer-reviewed journals
Current Opinion in Plant Biology, eLife
2007-present *Ad hoc* reviewer for peer-reviewed journals
ACS Catalysis, ACS Central Science, ACS Chemical Biology, ACS Synthetic Biology, Biochemistry, Bioinformatics and Biology Insights, *Cell*, *Cell Research, Crystal Growth & Design, Current Biology, Current Topics in Medicinal Chemistry, eLife, Frontiers in Plant Science, International Journal of Biological Macromolecules, ISRN Botany, Journal of Experimental Botany, Microbial Biotechnology, Molecular Biology and Evolution, Molecular Plant, Nature, Nature Biotechnology, Nature Chemical Biology, Nature Communications, Nature Plants, New Phytologist, Plant Biology, Plant Cell, Plant Journal, Plant Physiology, Plant Science, Plos Genetics, Plos One, PNAS, Science, Science Advances, Phytochemistry, Scientific Reports, Recent Advances in Phytochemistry*, *Tetrahedron, Trends in Biochemical Sciences*.

GRANT SUPPORT

Novo Nordisk Foundation, "Transformative plant science to engineer resiliency and enhance global food security under changing climate", 02/01/25-01/31/28, Co-PI

Pew Innovation Fund, "Defining the Food-Host Interactome", 12/01/24-11/30/27, Co-PI

Bayer Crop Science, "New cyclic peptides for the development of insect control traits in plants", 11/01/23-10/31/24, PI

Chan Zuckerberg Initiative, "A plant small-molecule discovery platform to study neurodegeneration", Phase 2 grant, 08/01/22-07/31/26, Co-PI

United States Department of Agriculture, "Discovery and engineering of plant branched cyclic peptide biosynthesis", 01/01/22-12/31/24, PI

Schooner Foundation, "Trait Discovery and Engineering in Orphan Crops", 01/01/22-12/31/24, Co-PI

Grantham Foundation, “Engineering sporopollenin biosynthesis and secretion in plant roots as a scalable solution to carbon sequestration”, 09/15/21-09/14/24, PI

Food Allergy Science Initiative, “The role of phytochemicals in food allergy”, 08/01/21 and onward, Investigator, PI

Chan Zuckerberg Initiative, “A plant small-molecule discovery platform to study neurodegeneration”, Phase 1 grant, 12/01/20-05/31/22, Co-PI

Gordon & Betty Moore Foundation/U.C. Berkeley, Subaward, “Symbiosis in Aquatic Systems Initiative: symbiosis model systems solicitation”, 04/25/20-03/01/23, Co-PI

The G. Harold and Leila Y. Mathers Foundation, “A branched cyclic peptide engine for target-based drug discovery in living cells”, 12/01/19-11/30/22, PI

W.M. Keck Foundation, “Harnessing plant-virus interactions for evolving biocatalysts at will”, 07/01/19-06/30/22, PI

Schooner Foundation, “Developing modern wound-healing medicines inspired by the traditional herbal remedy *Agave americana*”, 12/01/18-11/30/21, PI

Scialog/Research Corporation for Science Advancement, “Synthetic Organelle Biology: Engineering Photosynthetic Animal Cells”, 02/01/19-01/31/21, Co-PI

Scialog/Gordon & Betty Moore Foundation, “A plant cell-based platform to target human proteostasis diseases”, 03/01/19-05/01/21, Co-PI

The Smith Family Foundation Odyssey Award, “Novel Psychiatric Therapeutics Inspired by Bioactive Plant Polyketides”, 08/01/18-07/31/20, PI

National Science Foundation, “Elucidation and engineering of complete firefly luciferin biosynthesis”, 09/01/18-08/31/21, PI

Charles E. Reed Faculty Initiatives Fund, MIT, “Single-molecule Protein Encapsulation by Self-assembly Chemistry”, 07/01/18-06/30/21, PI

National Science Foundation, “Thiol-based redox switch in plant flavonoid biosynthesis”, 07/15/2017-06/30/2021, PI

Edward N. & Della L. Thome Memorial Foundation, “Bioactive cyclic peptides as potential therapeutics for Alzheimer’s Disease”, 04/01/17-12/31/18, PI

The Family Larsson-Rosenquist Foundation, “Probing the effective and toxic principles of four herbal galactagogues”, 01/01/17-12/31/21, PI

Beckman Foundation, “Exploring and exploiting firefly and coelenterate luciferin biosynthesis”, 09/01/16-8/31/21, PI

MIT Alumni Class Funds, “Implementing a modern multi-omics approach in experimental molecular genetics project lab (7.15)” (for undergraduate teaching), 07/01/16-06/30/17, PI

Jeptha and Emily V. Wade Award, “Tapping plant chemodiversity to find cures for protein folding diseases”, 07/01/15-06/30/16, PI

Searle Scholars Program, “Mechanistic basis for thiol-based redox switches in metabolic enzymes”, 07/01/15-06/30/18, PI

Pew Scholars Program, “Elucidating the key action mechanisms of guanidine-based, anti-diabetic drugs”, 07/01/14-06/30/18, PI