

Markita del Carpio Landry

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RESEARCH SUMMARY

My research group merges the fields of single-molecule biophysics, colloid/interface science, and nanotechnology to develop probes for imaging neuromodulation in the brain, to study lipid nanoparticle-based nucleic acid delivery, and for the delivery of genetic material to plants. My lab's research has been highlighted in [NPR](#), [Popular Mechanics](#), [The San Francisco Chronicle](#), [TEDx](#), and [C&E news](#). Short research talks (in both English and Spanish) [available on my lab website](#).

POSITIONS AND AFFILIATIONS

- **University of California, Berkeley**, Berkeley, CA
Chancellor's Professor, Chemical and Biomolecular Engineering, 07/2026 – present
Associate Professor, Chemical and Biomolecular Engineering, 07/2022 – 06/2026
Associate Professor, Department of Neuroscience, 07/2024 – present
Associate Professor, Department of Molecular and Cellular Biology, 08/2025 – present
Assistant Professor, Chemical and Biomolecular Engineering, 07/2016 – 07/2022
- **Lawrence Berkeley National Laboratory**, Berkeley, CA
Faculty Scientist, Molecular Biophysics and Integrated Bioimaging, 01/2017 - present
- **Chan-Zuckerberg Biohub**, San Francisco, CA
Investigator, 02/2017 - present
- **Co-Founder, Biophilia Genetics**
CSO, 06/2023 – present
- **Consultant for and/or advisory board member of**
Round Table Group Consortium, 2026 – present
CrowdPlat, Inc., 2026 – present
Biotelliga, 2025 – present
Threeum, 2025 – present
Terramera, 2018 – present
Burroughs Wellcome Fund, 2023 – present
Syngenta, 2023 – 2024

EDUCATION

- **Massachusetts Institute of Technology**, Cambridge, MA
NSF Post-doctoral Research Fellow, Chemical Engineering, 2013 – 2016
Postdoctoral Advisor: Michael S. Strano
- **University of Illinois at Urbana-Champaign**, Champaign, IL
[Ph.D.](#) Chemical Physics, 2012
Advisor: Yann R. Chemla
Thesis Title: *Single-molecule methods for an improved understanding of biophysical interactions: From fundamental biology to applied nanotechnology*
[Certificate](#) in Business Administration, 2009
- **University of North Carolina at Chapel Hill**, Chapel Hill, NC
[B.S.](#) Chemistry, Biochemistry Track, 2006
[B.A.](#) Physics, 2006

HONORS AND AWARDS

2026	UC Regents Innovation Awards, Disruptive Research Award (About)
2026	Canada Impact+ Research Chair, Declined (About)
2026	Fulbright Fellow (About)
2026	Alexander von Humboldt Foundation Bessel Research Award (About)
2026	Harvard Radcliffe Fellowship (About)
2025	Guggenheim Fellow (About)

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2025	MIT Charles L. Cooney Endowed Lecture (About)
2025	Caltech Robert W. Vaughan Endowed Lecture (About)
2025	Member, National Academies of Science of Bolivia (About)
2024	Blavatnik National Laureate in Chemistry (About)
2024	Member, New York Academy of Sciences (About)
2024	Notre Dame 2024 Thiele Award lecture (About)
2024	Heising-Simons Faculty Award (About)
2024	Society for Neuroscience (SfN) Presidential Lecture
2023	Schmidt Polymaths Award (About)
2023	Keck Foundation Award (About)
2023	The Purdue Duncan and Suzanne Mellichamp Award Lectureship (About)
2023	Bakar Prize (About)
2022	UNC Chapel Hill Distinguished Young Alumni Award (About)
2022	National Academies Science Diversity Leadership Award Honorable Mention (About)
2022	McKnight Scholar Award (About)
2022	Philomathia Prize (About)
2022	Vilcek Prize for Creative Promise in Biomedical Science (About)
2021	Chan-Zuckerberg Biohub Investigator (About)
2021	Dreyfus Foundation Teacher-Scholar Award (About)
2021	NSF CAREER Award (About)
2021	2021 Nature Research Awards for Inspiring Women in Science (About)
2021	NAS Standing Committee on Biotechnology Capabilities and National Security Needs
2021	University of Illinois at Urbana-Champaign Commencement Speaker
2020	Cell Press 100 Most Inspiring Hispanic/Latinx Scientists in America (About)
2020	SfN Janett Rosenberg Trubatch Career Development Award (About)
2020	University of Illinois Alumni Association Young Alumni Award (About)
2020	Frontiers of Imaging: CZI Deep Tissue Imaging Award (About)
2020	2020 Emerging Leader in Molecular Spectroscopy Award (About)
2020	ECS Nanocarbons Division Young Investigator Award (About)
2019	C&EN Talented 12 (About)
2019	Kavli Fellow, National Academies of Science (About)
2019	Bakar Fellow (About)
2019	Prytanean Faculty Award (About)
2018	Society of Hispanic Professional Engineers Young Investigator Award (About)
2018	HHMI Gilliam Fellow (About)
2018	DARPA Young Faculty Award (About)
2018	Sloan Foundation Fellow (About)
2017	Kavli Fellow, National Academies of Engineering (About)
2017	Innovative Genomics Institute Fellow (About)
2017	Foundation for Food and Agriculture Research (FFAR) New Innovator Award (About)
2017	Hellen Wills Neuroscience Institute – Radical Ideas Awardee (About)
2017	Stanley Fahn Junior Faculty Award (About)
2017	Beckman Foundation Young Investigator (About)
2017	Chan-Zuckerberg Biohub Investigator (About)
2016	Burroughs Wellcome Fund Career Award at the Scientific Interface (About)
2015	Brain and Behavior Foundation (NARSAD) Young Investigator Award (About)
2015	NIH Follow That Cell Challenge – Finalist (About)
2014	Burroughs Wellcome Fund PDEP (About)
2013	NSF Postdoctoral Research Fellowship
2009	NSF Graduate Research Fellowship
2011	Society of Hispanic Professional Engineers Fellowship
2008	TA of Excellence Award: Teaching Assistant rated as excellent by students

LANGUAGES

English	Native speaker, writer, reader
French	Native speaker, writer, reader
Spanish	Native speaker, writer, reader

PUBLICATIONS

‡corresponding author

1. Mun, J., Power, K.C., Beery, A.K., **Landry, M.P.**‡ Neurochemical imaging reveals changes in dopamine dynamics with photoperiod in a seasonally social vole species. *PNAS* (2026)
2. Yang, S.J., Komatsu, N., Butler, B., O'Donnell J.T., Giordani, F., Irrinki, A., Schaffer, D.‡, **Landry, M.P.**‡ Visualizing synaptic disruptions in the release and regulation of dopamine in Huntington's Disease. *Journal of Neuroscience* (2026)
3. Nishitani, S.‡, Liang, Z., Tabo, A., Zhang, W., Smith, D., Xu, K., **Landry, M.P.**‡ High-Purity Monovalent Functionalization of Carbon Nanotubes. *Angewandte Chemie* (2026)
4. Tarchick, M., Caval-Holme, F., Smith, B., Mocellin, P., **Landry, M.P.**, Komatsu, N.‡, Feller, M. ‡ Adapting a two-photon scanning microscope for simultaneous single-photon imaging of an infrared dopamine sensor. *eNeuro* (2026)
5. Voke, E., Arral, M., Squire, H.J., Lin, T., Coreas, R., Lui, A., Lavarone, A.T., Pinals, R.L.‡, Whitehead, K.A.‡, **Landry, M.P.**‡ Protein corona formed on lipid nanoparticles compromises delivery efficiency of mRNA cargo. *Nature Communications* (2025)
6. Nishitani, S., Ao, K., Jalil, A., Arias, T., Moudi, A., Chen, F., Biyani, A., Muppirala, P.N., **Landry, M.P.**‡ Redox dye mediated fluorescence energy transfer of carbon nanotube based nanosensors. *PNAS* (2025)
7. Black, A.B., Komatsu, N., Zhao, J., Raskey, S.R., Serrano, N.S., Sharma, S.R., Manoli, D.S., **Landry, M.P.**‡, Beery, A.K.‡ Oxytocin receptors mediate social selectivity in prairie vole peer relationships. *Current Biology* (2025)
 - Highlighted in [Popular Science](#)
 - Highlighted in [UC Berkeley News](#)
8. Mun, J., Jackson, S., Prounis, G., Phumsatitpong, C., Motahari, N., Kriegsfeld, L., **Landry, M.P.**, Wilbrecht, L.‡ Absence of testes at puberty impacts functional development of nigrostriatal but not mesoaccumbal dopamine terminals in a wild-derived mouse. *eNeuro* (2025)
9. Klinger, M.E., Miller, R., Wilbrecht, L., **Landry, M.P.**‡ Optical fibers functionalized with single-walled carbon nanotubes for flexible fluorescent catecholamine detection. *Langmuir* (2025)
10. Kou, E., Luo, Z., Ye, J., Xu, C., Lu, D., **Landry, M.P.**, Zhang, H., Zhang, H.‡ Sunlight-sensitive carbon dots for plant immunity priming and pathogen defense. *Plant Biotechnology Journal* (2025)
11. Ashkarran, A.A., Gharibi, H., Sadeghi, S.A., Modaresi, S.M., Wang, Q., Lin, Lin, T., Yerima, G., Tamadon, A., Sayadi, M., Jafari, M., Lin, Z., Ritz, D., Kakhniashvili, D., Guha, A., Mofrad, M., R., Sun, L., **Landry, M.P.**, Saei, A.A., Mahmoudi, M.‡ Small molecule modulation of protein corona for deep plasma proteome profiling. *Nature Communications* (2024)
12. Squire, H., Tomatz, S., Wang, J., Gonzalez-Grandio, E., **Landry, M.P.**‡ Best practices and pitfalls in developing nanomaterial delivery tools for plants. *ACS Nano* (2024)
13. Huzar, J., Coreas, R., **Landry, M.P.**, Tikhomirov, G.‡ AI-based Prediction of Protein Corona Composition on DNA Nanostructures. *ACS Nano* (2024)
14. Mun, J., Navarro, N., Jeong, S., Ouassil, N., Leem, E., Beyene, A.G., **Landry, M.P.**‡ Near Infrared Nanosensors Enable Optical Imaging of Oxytocin with Selectivity over Vasopressin in Acute Mouse Brain Slices. *PNAS* (2024)
15. Safaee, M.M.*, Nishitani, S.*, McFarlane, I.R., Yang, S.J., Sun, E., Medina, S.M., **Landry, M.P.**‡ Dual Infrared 2-Photon Microscopy Achieves Minimal Background Deep Tissue Imaging in Brain and Plant Tissues. *Advanced Functional Materials* (2024)
16. Squire, H., Kim, M., Wong, C., Seng, A., Lee, A., Goh, N., Wang, J., **Landry, M.P.**‡ Cellulose Nanocrystals Protect Plants from Pathogen Infection. *ACS Applied Nanomaterials* (2024)
17. Kelich, P., Adams, J., Jeong, S., Navarro, N., **Landry, M.P.**, Vuković, L.‡ Predicting Serotonin Detection with DNA-Carbon Nanotube Sensors Across Multiple Spectral Wavelengths. *Journal of Chemical Information and Modeling* (2024)

18. Ledesma, F., Nishitani, S., Cunningham, F.J., Hubbard, J.D., Yim, D., Lui, A., Chio, L., Murali, A., **Landry, M.P.**‡ Covalent Attachment of Horseradish Peroxidase to Single-Walled Carbon Nanotubes for Hydrogen Peroxide Detection. *Advanced Functional Materials* (2024)
19. Gharibi, H., Ashkarran, A., Jafari, M., Voke, E., **Landry, M.P.**, Saei, A., Mahmoudi, M.‡ A uniform data processing pipeline enables harmonized nanoparticle protein corona analysis across proteomics core facilities. *Nature Communications* (2024)
20. Rosenberg, D. J., Cunningham, F. J., Hubbard, J., D., Goh, N. S., Wang, J. W., Nishitani, S., Hayman, E., Hura, G., L., **Landry, M.P.**, Pinals, R. L.‡ Mapping the morphology of DNA on carbon nanotube-based sensors in solution using X-ray scattering interferometry. *Journal of the American Chemical Society* 2023
21. Nishitani, S., Tran, T., Yang, L., Landry, M.P. **Landry, M.P.**‡ Engineered glucose oxidase-carbon nanotube conjugates for tissue-translatable glucose nanosensors. *Angewandte Chemie* (2023)
22. Sorooshyari, S.K., Ouassil, N., Yang, S.J., **Landry, M.P.**‡ Identifying Neural Signatures of Dopamine Signaling with Machine Learning. *ACS Chemical Neuroscience* (2023)
 - Selected for journal cover
23. Wang, J.W., Goh, N., Lien, E., Gonzalez Grandio, E., **Landry, M.P.**‡ Delivered complementation in planta (DCIP) enables measurement of peptide-mediated protein delivery efficiency in plants. *Nature Communications Biology* (2023)
24. Mahmoudi, M.‡, **Landry, M.P.**, Moore, A., Coreas, R.‡ The protein corona from nanomedicine to environmental science. *Nature Reviews Materials* (2023)
 - Selected for journal cover
25. Squire, H., Tomatz, S., Voke, E., **Landry, M.P.**‡ The emerging role of nanotechnology in plant genetic engineering. *Nature Reviews Bioengineering* (2023)
26. Sharifi, S., Reuel, N.F., Kallmyer, N.E., Sun, E., **Landry, M.P.**‡, Mahmoudi, M.‡ The issue of reliability and repeatability of analytical measurements in industrial and academic nanomedicine. *ACS Nano* (2022)
27. Ashkarran, A.A., Gharibi, H., Voke, E., **Landry, M.P.**, Saei, A.A.‡, Mahmoudi, M.‡ Measurements of heterogeneity in proteomics analysis of nanoparticle protein corona across core facilities. *Nature Communications* (2022)
28. Munos, A., Theusch, E., Kuang, Y.L., Nalula, G., Peaslee, C., Dorlhiac, G., **Landry, M.P.**, Streets, A., Krauss, R.M., Iribarren, C., Mattis, A.N., Medina, M.W.‡ Undifferentiated Induced Pluripotent Stem Cells as a Genetic Model for Nonalcoholic Fatty Liver Disease. *Cellular and Molecular Gastroenterology and Hepatology* (2022)
29. Zhang, H.* , Goh, N.S.* , Wang, J., Demirer, G.S., Butrus, S., Park, S-J, **Landry, M.P.**‡ Nanoparticle Cellular Internalization is Not Required for RNA Delivery to Mature Plant Leaves. *Nature Nanotechnology* (2022)
 - Highlighted in [Nature Materials \(2021\)](#), [C. Horejs](#)
30. Ouassil, N.* , Pinals, R.L.* , O'Donnell, J.T.D., Wang, J., **Landry, M.P.**‡ Supervised Learning Model to Predict Protein Adsorption to Nanoparticles. *Science Advances* (2022)
31. Zhang, X., Dorlhiac, G., **Landry, M.P.**, Streets, A.‡ Phototoxic effects of nonlinear optical microscopy on cell cycle, oxidative states, and gene expression. *Scientific Reports* (2022)
32. Zahir, A., Serag, M.F., Demirer, G.D., Torre, B., di Fabrizio, E., **Landry, M.P.**, Habuchi, S.‡, Mahfouz, M.‡ DNA-Carbon Nanotube Binding Mode Determines the Efficiency of Carbon Nanotube-Mediated DNA Delivery to Intact Plants. *ACS Applied Nano Materials* (2022)
33. Gonzalez-Grandio, E., Demirer, G.S., Jackson, C.T., Yang, D., **Landry, M.P.**‡ Carbon nanotube biocompatibility in plants is determined by their surface chemistry. *Journal of Nanobiotechnology* (2022)
34. Sharifi, S., Mahmoud, N., Voke, E., **Landry, M.P.**‡, Mahmoudi, M.‡ Importance of standardizing analytical characterization methodology for improved reliability of the nanomedicine literature. *Nano-Micro Letters* (2022)
35. Grandio-Gonzalez, E., Demirer, G.S., Ma, W., Brady, S.M., **Landry, M.P.**‡ A ratiometric dual color luciferase reporter for fast characterization of transcriptional regulatory elements. *ACS Synthetic Biology* (2021)
36. Kelich, P., Jeong, S., Navarro, N., Adams, J., Sun, X., Zhao, H., **Landry, M.P.**‡, Vukovic, L.‡ Machine learning enables discovery of DNA carbon nanotube sensors for serotonin. *ACS Nano* (2021)

37. Jackson, C.T., Wang, J.W., Gonzalez-Grandio, E., Goh, N., Mun, J., Krishnan, S., **Landry, M.P.**[‡] Polymer-Conjugated Carbon Nanotubes for Biomolecule Loading. *ACS Nano* (2021)
38. O'Donnell, J.T., Mun, J., Delevich, K.[‡], **Landry, M.P.**[‡] Synthetic nanosensors for imaging neuromodulators. *Journal of Neuroscience Methods* (2021)
39. Jeong, S., Grandio, E.G., Navarro, N., Pinals, R., Ledesma, F., Yang, D., **Landry, M.P.**[‡] Extraction of Viral Nucleic Acids with Carbon Nanotubes Increases SARS-CoV-2 RT-qPCR Detection Sensitivity. *ACS Nano* (2021)
40. Zhang, H., Cao, Y., Xu, D., Goh, N.S., Demirer, G.S., Chen, Y., **Landry, M.P.**[‡], Yang, P.[‡] Gold nanocluster mediated delivery of siRNA to intact plant cells for efficient gene knockdown. *Nano Letters* (2021)
41. Wang, J.W., Cunningham, F.J., Goh, N., Boozarpour, N.N., Pham, M., **Landry, M.P.**[‡] Nanoparticles for protein delivery in planta. *Current Opinion in Plant Biology* (2021). 60 (102052).
42. Pinals, R., Ledesma, F., Yang, D., Jeong, S., Navarro, N., Pak, J.E., **Landry, M.P.**[‡] Rapid SARS-CoV-2 Detection by Carbon Nanotube-Based Near-Infrared Nanosensors. *Nano Letters* (2021) 21(5), 2272–2280
43. Voke, E., Pinals, R.L., Goh, N., **Landry, M.P.**[‡] In Planta Nanosensors: Understanding Bio-corona Formation for Functional Design. *ACS Sensors* (2021)
44. Yang, S., Del Bonis-O'Donnell, **Landry, M.P.**[‡] Near-infrared catecholamine nanosensors for high spatiotemporal dopamine imaging. *Nature Protocols* (2021). 16, 3026–3048
45. Demirer, G.S.[‡], Silva, T.N., Jackson, C.T., Thomas, J.B., Ehrhardt, D., Rhee, S.Y.[‡], Mortimer, J.C.[‡], **Landry, M.P.**[‡] Nanotechnology to advance CRISPR/Cas genetic engineering of plants. *Nature Nanotechnology* (2021). 16, 243–250
46. Demirer, G.S.[‡], **Landry, M.P.**[‡] Efficient Transient Gene Knock-down in Tobacco Plants Using Carbon Nanocarriers. *Bio-protocol* (2021). 11(1)
47. Pinals, R.L., Yang, D., Rosenberg, D.J., Chaudhary, T., Crothers, A.R., Iavarone, A.T., Hammel, M., **Landry, M.P.**[‡] Quantitative Protein Corona Composition and Dynamics on Carbon Nanotubes in Biological Environments. *Angewandte Chemie* (2020). 59 (52), 23668-23677
48. Yang, D., Yang, S., Del Bonis-O'Donnell, J. T., Pinals, R., **Landry, M.P.**[‡] Transcriptomic and morphological response of SIM-A9 mouse microglia to carbon nanotube neuro-sensors. *ACS Nano* (2020). 14 (10), 13794–13805
49. Hofmann, T., Lowry[‡], G.V.[‡], Ghoshal, S., Tufenkji, N., Brambilla, D., Dutcher, J.R., Gilbertson, L.M., Giraldo, J. P., Kinsella, J. M., **Landry, M.P.**[‡], Lovell, W., Naccache, R., Paret, M., Pedersen, J. A., Unrine, J., M., White, J.C., Wilkinson, K.J. Technology readiness and overcoming barriers to sustainably implement nanotechnology-enabled plant agriculture. *Nature Food* (2020). 1, 416–425
50. Zhang, H., Liu, X., Zhang, C., Su, J., Lu, X., Shi, J., Wang, L., **Landry, M.P.**[‡], Zhu, Y., Lv, M., Mi, X.[‡] Ultrasensitive Fluorescent Microarray Platform for Nucleic Acid Test. *Sensors and Actuators B* (2020). 321, 128538
51. Pinals, R.L., Chio, L., Ledesma, F., **Landry, M.P.**[‡] Engineering at the nano-bio interface: harnessing the protein corona towards nanoparticle design and function. *Analyst* (2020). 145, 5090 - 5112
52. Alizadehmojarad, A.A., Zhou, X., Beyene, A.G., Chacon, K., Sung, Y., **Landry, M.P.**[‡], Vuković, L.[‡] Binding affinity and conformational preferences influence kinetic stability of short oligonucleotides on carbon nanotubes. *Advanced Materials Interfaces* (2020). 7 (15), 2000353
53. Zhang, H., Zhang, H., Demirer, G.S., Gonzales-Grandio, E., Fan, C., **Landry, M.P.**[‡] Engineering DNA nanostructures for siRNA delivery in plants. *Nature Protocols* (2020). 15, 3064–3087
54. Jeong, S. Pinals, R.L., Sharmadhikari, B., Song, H., Kalluri, A., Debnath, D., Wu, Q., Ham, M.H., Patra, P.[‡], **Landry, M.P.**[‡] Graphene Quantum Dot Oxidation Governs Noncovalent Biopolymer Adsorption. *Scientific Reports* (2020). 10, 7074
55. Demirer, G.S., Zhang, H., Goh, N.S., Chang, R., **Landry, M.P.**[‡] Carbon nanocarriers deliver siRNA to intact plant cells for efficient gene knockdown. *Science Advances* (2020). 6 (26).
56. Heller, D.[‡], Jena, P., Pasquali, M. Kostarelos, K.,... **Landry, M.P.**[‡], Wenseleers, W., Yudaska, M. Banning carbon nanotubes would be scientifically unjustified and damaging to innovation. *Nature Nanotechnology* (2020). 15, 164–166

57. Chio, L., Pinals, R., Murali, A., Goh, N.S., **Landry, M.P.**† Surface Modification Effects on Single-Walled Carbon Nanotubes for Multimodal Optical Applications. *Advanced Functional Materials* (2020). 30 (17), 1910556
58. Cunningham, F.J., Demirer, G.S., Goh, N.S., Zhang, H., Landry, M.P.†. Nanobiologics: An Emerging Genetic Transformation Approach. *Biolistic DNA Delivery in Plants* (2020). pp 141-159
59. Pinals, R.L.*, Yang, D.*, Lui, A., Cao, W., **Landry, M.P.**† Corona exchange dynamics on carbon nanotubes by multiplexed fluorescence monitoring. *JACS* (2019). 142 (3), 1254–1264
60. Jeong, S., Yang, D., Beyene, A.G., O'Donnell, J.T.D., Gest, A. M., Navarro, N., Sun, X., **Landry, M.P.**† High Throughput Evolution of Near Infrared Serotonin Nanosensors. *Science Advances* (2019). 5 (12), 1-12
61. Lui, A., Wang, J., Chio, L., **Landry, M.P.**† Synthetic probe development for measuring single or few-cell activity. (2019). *Methods in Enzymology*
62. **Landry, M.P.**†, Mitter, N.† How nanocarriers delivering cargoes in plants can change the GMO landscape. *Nature Nanotechnology* (2019). 14, 512–514
63. Demirer, G.S., Zhang, H., Goh, N.S., Grandio, E.G., **Landry, M.P.**† Carbon nanotube-mediated DNA delivery without transgene integration in intact plants. *Nature Protocols*, (2019). 14, 2954–2971
64. Beyene, A. G., Delevich, K., O'Donnell, J.T.D., Piekarski, D.J., Lin, W.C., Thomas, A.W., Yang, S.J., Kosillo, P., Yang, D., Wilbrecht, L., **Landry, M.P.**† Imaging Striatal Dopamine Release Using a Non-Genetically Encoded Near-Infrared Fluorescent Catecholamine Nanosensor. *Science Advances* (2019). 5 (7), 1-11
 - Highlighted in [Nature \(2019\)](#), [J. Lambert](#)
 - Highlighted in [C&E News](#)
 - Highlighted in [the San Francisco Chronicle](#)
65. Chio, L., O'Donnell, J.T., Kline, M., Kim, J.H., McFarlane, I.R., Zuckermann, R.N., **Landry, M.P.**† Electrostatic-assemblies of single-walled carbon nanotubes and sequence-tunable peptoid polymers detect a lectin protein and its target sugars. *Nano Letters* (2019). 19 (11), 7563–7572
 - Selected for journal cover
66. Demirer, G.S., Zhang, H., Matos, J., Goh, N., Cunningham, F.J., Sung, Y., Chang, R., Aditham, A.J., , Chio, L., Cho, M.J., Staskawicz, B., **Landry, M.P.**† High Aspect Ratio Nanomaterials Enable Delivery of Functional Genetic Material Without DNA Integration in Mature Plants. *Nature Nanotechnology* (2019). 14, 456-464
 - Interview and Highlighted on [NPR](#), [popular mechanics](#), and [C&E news](#)
 - Selected for NPR's [Changing the World One Invention at a Time](#) series
67. Zhang, H.*, Demirer, G.S.*, Zhang, H., Ye, T., Goh, N.S., Aditham, A.J., Cunningham, F.J., Fan, C., **Landry, M.P.**† Low-dimensional DNA Nanostructures Coordinate Gene Silencing in Mature Plants. *PNAS* (2019). 116 (15), 7543-7548
68. Wang, J.W, Grandio, E.G., Newkirk, G.M., Demirer, G.S., Butrus, S., Giraldo, J.P.†, **Landry, M.P.**† Nanoparticle-mediated genetic engineering of plants. *Molecular Plant* (2019). 12 (8), 1037-1040
69. Beyene, A.G., Delevich, K., Yang, S.J., **Landry, M.P.**† New Optical Probes Bring Dopamine to Light. *ACS Biochemistry* (2018). 57 (45), 6379-6381
70. Del Bonis-O'Donnell, J.T., Del Bonis-O'Donnell, J.T., Pinals, R., Jeong, S., Thakrar, A., Wolfringer, R., **Landry, M.P.**† Chemometric Approaches for Developing Infrared Nanosensors to Image Anthracyclines. *ACS Biochemistry* (2018). 58 (1), 54–64
71. Beyene, A. G., Alizadehmojarad, A.A., Dorlhiac, G., Streets, A.M., Kral, P., Vukovic, L.†, **Landry, M.P.**† Ultralarge Modulation of Fluorescence by Neuromodulators in Carbon Nanotubes with Self-Assembled Oligonucleotide Rings. *Nano Letters* (2018). 18 (11), 6995-7003
72. Del Bonis-O'Donnell, J.T., Chio, L., Dorlhiac, G.F., McFarlane, I.R., **Landry, M.P.**† Advances in Nanomaterials for Brain Microscopy. *NanoResearch* (2018). 11, 5144–5172
73. Zou, R., Zhu, X., Tu, Y.†, Wu, J.†, **Landry, M.P.**† Activity of Antimicrobial Peptides Decreases with Increased Cell Membrane Crossing Free Energy Cost. *ACS Biochemistry* (2018). 57 (18), 2606-2610
74. Cunningham, F.J., Goh, N., Demirer, G., Matos, J.L, **Landry, M.P.**† Nanoparticle-Mediated Delivery in Plants for Transgene-Free Genetic Engineering. *Cell Press Trends in Biotechnology* (2018). 36 (9), p. 882-897.

75. Kwak, S.Y., Giraldo, J.P., Wong, M.H., Koman, V., Lew, T., Ell, J., Weidman, M., Sinclair, R., **Landry, M.P.**, Tisdale, W.A., Strano, M.S.[‡] A Nanobionic Light Emitting Plant. *Nano Letters* (2017). 8, 7552 – 7559
76. Li, S., Zou, R., Wu, J. ‡, **Landry, M.P.**[‡] Cholesterol-Directed Nanoparticle Assemblies Based on Single Amino Acid Peptide Mutations Activate Cellular Uptake and Decrease Tumor Volume. *RSC Chemical Science* (2017). 8, 7552 – 7559
77. Luo, Z., Zou, R., Wu, J. ‡, **Landry, M.P.**[‡] A Probe for the Detection of Hypoxic Cancer Cells. *ACS Sensors* (2017). (8), 1139-1145
78. Beyene, A.B., McFarlane, I.R., Pinals, R.L., **Landry, M.P.**[‡] Stochastic Simulation of Dopamine Neuromodulation for Implementation of Fluorescent Neurochemical Probes in the Striatal Extracellular Space. *ACS Chemical Neuroscience* 8 (10), 2275-2289 (2017). 8 (10), 2275–2289
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MANUSCRIPTS UNDER REVIEW OR REVISION AND ON BIORXIV

102. Squire, H., Wang, J., **Landry, M.P.[‡]** The third alpha helix of plant homeoproteins are generally cell-penetrating to plant cells. *bioRxiv* (2025) – under revision at *Nature Biotechnology*
103. Lin, Teng-Jui, Hillman, K., Kim, L., Garg, M., Duong, M., **Landry, M.P.[‡]** Quantifying Misuse of Color in Biological Research. *bioRxiv* (2025)
104. Hubbard, H.J., Tomatz, S., Carll, N., Matos, J., Hassan, D., Ly, T., **Landry, M.P.[‡]** Anionic polymers stabilize Cas9 ribonucleoprotein nanoparticles to improve direct protein delivery and genome editing efficiencies in plant protoplasts. *bioRxiv* (2025)
105. Coreas, R., Sridhar, N., Lin, T., Squire, H.J., Voke, E., **Landry, M.P.[‡]** Deep profiling of plant stress biomarkers following bacterial pathogen infection with the nano protein corona. *bioRxiv* (2025)
106. Lin, T., **Landry, M.P.[‡]** Quantifying Data Distortion in Bar Graphs in Biological Research. *bioRxiv* (2024)
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107. Dorlhiac, G., Streets, A.[‡], **Landry, M.P.[‡]** Isotopologues as a general strategy to image neurotransmitters with vibrational microscopy. *aRxiv* (2022)

PATENTS & INVENTION DISCLOSURES

[‡] Denotes lead inventor

1. **Landry, M.P.[‡]**, Tomatz, S., Schenstniy, K. Simultaneous high-efficiency editing of multiple alleles in plant cells. PCT Patent U Cal No. BK-2026-088-1 to be submitted March 2026
2. **Landry, M.P.[‡]**, Squire, H., Wang, J. Cell-penetrating peptides for nucleic acid and protein delivery in plants. PCT Patent Application No. PCT/US24/37862 filed November 14 2025
3. **Landry, M.P.[‡]**, Wilbrecht, L., Beyene, A. B., O'Donnell J.T.D. Near-Infrared probes for modulatory neurotransmitter imaging in brain tissue. US Patent US11,357,872 issued on Jun 14, 2022.

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4. **Landry, M.P.†**, Demirer, G.S. Mature plant transfection using carbon nanotubes. US Pat. No.11,661,606 issued on May 30 2023.
5. Kausch, A.P., **Landry, M.P.†**, Methods and Compositions for In Vivo Direct Genome Editing in Plants. UC Berkeley and University of Rhode Island Provisional Patent 18/495,731 filed October 26th, 2023.
6. **Landry, M.P.†** Lui, A., High throughput method to validate lipid nanoparticle efficacy and cytotoxicity. UC Berkeley Invention disclosure filed May 2023.
7. **Landry, M.P.†** Wang, J., Squire, H., Cell penetrating peptides for nucleic acid and protein delivery in plants. UC Berkeley Provisional Patent 63/513,497 filed July 13th 2023.
8. **Landry, M.P.†** Matos, J., Cunningham, F., Genome editing in plants with carbon nanotubes. UC Berkeley Invention disclosure filed April 2023.
9. **Landry, M.P.†**, Lui, A. A high-throughput *in vitro* method to determine the cytotoxicity and efficacy profiles of lipid-nanoparticle based therapeutics such as mRNA vaccines. Invention disclosure filed April 2023.
10. **Landry, M.P.†**, Grandio, E., Jeong, S. High-Yielding Extraction of Single-Stranded Nucleic Acids with Solid Substrates. Invention disclosure BK-2021-079 filed December 2021.
11. **Landry, M.P.†**, Zhang, H., Demirer, G.S. Gene Silencing in Plants with DNA Origami Nanostructures. Invention disclosure BK-2019-044 filed September 2018.
12. Strano, M.S.†, Giraldo, J.P., **Landry, M.P.** Ratiometric sensors from single chirality carbon nanotubes. US Patent US11002741B2 issued on May 5, 2021.
13. Strano, M.S.†, Giraldo, J.P., **Landry, M.P.**, Faltermeier, S. Nanobionic engineering of organelles and photosynthetic organisms. US Patent US11208628B2 issued on December 28, 2021.

INVITED PRESENTATIONS

(1) PRESENTATIONS GIVEN IN FRENCH

- **Speaker at Laval University.** *Courir Sans Gaz: Comment Fonctionnent les Protéines qui sont Indépendantes de Sources d'Énergie Externes? Une Étude à l'Échelle de la Molécule Unique.* (Translation : *Running without Gas : How do proteins independent from external energy sources function?*). Laval, Québec, Canada. (February 2011)

(2) PRESENTATIONS GIVEN IN SPANISH

- **Seminario a la Universidad Mayor de San Andres:** Estableciendo la plantas medicinales Bolivianas para el tratamiento de malestares psiquiatros (*Translation: Establishing Bolivian medicinal plants for treatment of psychiatric disorders*). La Paz, Bolivia (January 2025)
- **Seminario MADIMED, Universidad de La Habana:** Detección de lo Invisible: *El poder de la Luz Infrarroja Cercana Para Aplicaciones Biológicas.* (Translation: *The Power of Infrared Light in Bioengineering*) Habana, Cuba. (June 2016)
- **Conferencias Físicas: Speaker at Universidad Mayor San Andrés:** *Observación de las Interacciones Proteínas y ADN con Pinzas Ópticas.* (Translation: *Observation of protein-DNA interactions with optical traps*). La Paz, Bolivia. (December 2008)

(3) PRESENTATIONS GIVEN IN ENGLISH

1. **21st European Molecular Imaging Meeting (Invited Plenary – Trailblazer Award Lecture):** *Near infrared molecular imaging of brain chemistry.* Ljubljana, Slovenia (March 2026)
2. **Hope College James and Jeanette Neckers Lecture (Invited Named Lecture):** *Near infrared molecular imaging of brain chemistry.* Holland, MI (February 2026)
3. **University of British Columbia Department of Chemical Engineering (Lecture):** *Neurochemical imaging reveals changes in social dynamics.* Vancouver, BC (February 2026)
4. **Pacificchem international conference (Invited):** *Dopamine nanosensors based on single-walled carbon nanotubes to understand brain development and disease.* Honolulu, HI (December 2025)

5. **Pacifichem international conference (Invited):** *Illuminating brain neurochemistry with nanoscale near-infrared probes.* Honolulu, HI (December 2025)
6. **University of Pennsylvania Department of Chemical and Biomolecular Engineering Seminar (Invited):** *Nanotechnologies for nucleic acid and protein delivery to plants.* Philadelphia, PA (December 2025)
7. **Shanghai Jiao Tong University Seminar (Invited):** *New nanotechnologies for plant bioengineering.* Shanghai, China (November 2025)
8. **Huazhong Agricultural University (Invited):** *New nanotechnologies for plant bioengineering.* Wuhan, China (October 2025)
9. **Caltech Robert W. Vaughan Endowed Lecture (Invited Award Lecture):** *Neurochemical imaging to understand brain health and disease.* Pasadena, CA (October 2025)
10. **Cell Symposia: Towards sustainable agriculture: Genomics, bioengineering, and smart technologies (Invited):** *New nanotechnologies for plant bioengineering.* Sanya, China (October 2025)
11. **MIT Charles L. Cooney Endowed Lecture (Invited Award Lecture):** *Neurochemical imaging to understand brain health and disease.* Cambridge, MA (September 2025)
12. **Harvard Medical School Department of Neurobiology (Invited):** *Neurochemical imaging to understand brain health and disease.* Boston, MA (September 2025)
13. **BRAIN Foundation Synchrony (Invited):** *Neurochemical imaging to understand the basis of friendships.* Asilomar, CA (August 2025)
14. **American Society of Plant Biologists (ASPB) (Invited Panelist)** *Seed to Tree: How Policy Can Help Plant Science Discoveries Grow into Companies in the Emerging Bioeconomy.* Milwaukee, WI (July 2025)
15. **UC Berkeley in Martha's Vineyard (Invited):** *Neurochemical imaging to understand brain health and disease.* Edgartown, MA (July 2025)
16. **Blavatnik Science Symposium (Invited):** *Neurochemical imaging to understand the basis of friendships.* New York, NY (July 2025)
17. **International Conference on Plant Nanotechnology 2025 (Invited Plenary):** *Plant homeoproteins as a source of newly-discovered plant cell penetrating peptides.* Poznan, Poland (July 2025)
18. **Max Planck Institute for Dynamics and Self-Organization – MPI-DS Colloquium (Invited):** *Near-infrared nanosensors to image neurochemistry.* Gottingen, Germany (July 2025)
19. **University of California Riverside Seminar (Invited):** *Plant homeoproteins for protein delivery to plants.* Riverside, CA (May 2025)
20. **Georgia Institute of Technology Seminar (Invited):** *Development of Neurochemical Probes to Image Brain Chemistry.* Atlanta, GA (April 2025)
21. **Northwestern University Department of Biology Seminar (Student Invited Speaker):** *Development of Neurochemical Probes to Image Brain Chemistry.* Chicago, IL (April 2025)
22. **Arizona State University Department of Materials Science Seminar (Invited):** *Development of Neurochemical Probes to Image Brain Chemistry.* Tempe, AZ (April 2025)
23. **Howard Hughes Medical Institute Janelia Research Campus: Genetic tools for new model organisms (Invited):** *Non-genetic tools for non-model organisms.* Ashburn, VA (October 2024)
24. **University of Maryland Plant Science and Landscape Architecture Seminar (Invited):** *Nanomaterials for delivery of biomolecules to plants.* College Park, MD (March 2025)
25. **Arizona State University Department of Chemical Engineering Seminar (Invited):** *Development of Neurochemical Probes to Image Brain Chemistry.* Tempe, AZ (February 2025)
26. **CRISPR Ag Biotech Congress (Invited):** *Strategies for protein delivery to plants.* Raleigh, NC (February 2025)
27. **WeSTEM conference (Invited):** *Convoluting paths into science: how to shape your career path with best practices in professional development.* Urbana Champaign, Illinois (February 2025)

28. **Advanced Imaging Methods (Invited):** *Near-infrared imaging to understand brain chemistry imbalances.* Berkeley, CA (January 2025)
29. **Brown University Chemistry Seminar (Invited):** *Imaging neurochemistry with nanosensors.* Providence, RI (January 2025)
30. **SynBYSS Conference (Invited Keynote):** *Nanomaterials for delivery of biomolecules to plants.* Honolulu, HI (December 2024)
31. **University of Illinois at Urbana-Champaign Physics Seminar (Invited):** *Development of Neurochemical Probes to Image Brain Chemistry.* Champaign, IL (November 2024)
32. **University of Illinois at Urbana-Champaign Chemistry Seminar (Student Invited Speaker):** *Nanomaterials for delivery of biomolecules to plants.* Champaign, IL (November 2024)
33. **Drug Carriers in Medicine and Biology Gordon Research Conference (Invited):** *Protein corona formation on lipid nanoparticles and implications for nanoparticle cellular entry.* Portland, ME (August 2024)
34. **International Conference on Plant Nanotechnology 2024 (Invited):** *Nanoparticles for DNA, RNA, and protein delivery to plants.* Poznan, Poland (October 2024)
35. **Society for Neuroscience Presidential Lecture (Invited):** *Illuminating brain chemistry to advance neurobiology.* Chicago, IL (October 2024)
36. **Blavatnik Foundation National Awards For Young Scientists (Invited):** *Nanotechnologies for life sciences applications.* New York, NY (October 2024)
37. **Columbia University Department of Chemical Engineering Student-Selected Colloquium Speaker (Invited):** *Nanotechnologies to illuminate brain chemistry.* New York, NY (September 2024)
38. **Drug Carriers in Medicine and Biology Gordon Research Conference (Invited):** *Protein corona formation on lipid nanoparticles and implications for nanoparticle cellular entry.* Portland, ME (August 2024)
39. **Nanoscale Science and Engineering for Agriculture and Food Systems Gordon Research Conference (Invited):** *DNA, RNA, and protein delivery with nanomaterials.* Manchester, NH (June 2024)
40. **Basal Ganglia Gordon Research Conference (Invited):** *Nanosensors for imaging brain chemistry.* Ventura, CA (March 2024)
41. **University of Colorado Boulder (Invited):** *Nanomaterial Strategies for plant bioengineering.* Boulder, CO (December 2023)
42. **University of Colorado Boulder (Invited):** *Near infrared imaging of neuromodulators in the brain.* Boulder, CO (December 2023)
43. **Colorado State Materials Science Department (Invited):** *Near infrared imaging of neuromodulators in the brain.* Fort Collins, CO (November 2023)
44. **Colorado State Plant Biology Department (Invited):** *Nanoparticles enable plant genetic engineering without transgene integration.* Fort Collins, CO (November 2023)
45. **MIT Bioengineering Department Seminar (Invited):** *Nanoparticles enable plant genetic engineering without transgene integration.* Boston, MA (November 2023)
46. **10th Plant Genomic & Gene Editing Congress (Invited):** *Nanomaterial Strategies for RNA and protein delivery in plants.* Raleigh, NC (October 2023)
47. **Mellichamp Award Lectureship, Purdue Chemical Engineering (Invited Named Lecture Series Speaker):** *Nanoparticles enable plant genetic engineering without transgene integration.* West Lafayette, IN (August 2023)
48. **Pennsylvania State University Materials Science Department Seminar (Invited):** *Nanoparticles enable the delivery of genetic material to plants without transgene integration.* State College, PA (October 2023)
49. **Memorial Sloan Kettering Cancer Center of Molecular Pharmacology and & Chemical Biology Seminar (Invited):** *Near infrared nanosensors to image neurochemistry in the brain.* New York, NY (September 2023)
50. **Stanford University Department of Chemistry (Invited):** *Nanoparticles enable the delivery of genetic material to plants without transgene integration.* Stanford, CA (September 2023)

51. **Fluorescent Proteins and biological Sensors, HHMI Research Campus (Invited):** *Imaging neuromodulation in the brain with near-infrared nanosensors.* Ashburn, Virginia (August 2023)
52. **Euroanalysis (Invited Keynote Speaker):** *Imaging neuromodulators with near infrared nanosensors.* Geneva, Switzerland (August 2023)
53. **Kyoto University Department of Chemistry (Invited):** *Nanomaterials enable delivery of genetic materials to plants without transgene integration.* Kyoto, Japan (July 2023)
54. **National Academies of Engineering JAFEO (Invited):** *Nanomaterials for life sciences applications.* Tokyo, Japan (July 2023)
55. **Nano Korea (Invited Keynote):** *Nanoparticles for the delivery of nucleic acids and proteins in plants.* Seoul, South Korea (July 2022)
56. **NT23 (Invited Plenary Speaker):** *Imaging neuromodulators and their implications in Huntington's Disease.* Bordeaux, France (June 2023)
57. **Electrochemical Society Meeting (Invited):** *Protein corona formation on single-walled carbon nanotubes.* Boston, MA (May 2023)
58. **MIT Chemical Engineering Seminar Series (Invited):** *Nanoparticles enable plant genetic engineering without transgene integration.* Boston, MA (February 2023)
59. **Nano Today 2023 (Invited):** *Nanoparticles enable plant editing without transgene integration.* San Diego, CA (February 2023)
60. **Harvard University Physics Seminar Series (Invited):** *Nanotechnology for life sciences applications.* Boston, MA (February 2023)
61. **Max Planck Humboldt Foundation Seminar (Invited):** *Nanobiotechnology for medicinal plant bioengineering.* Berlin, Germany (February 2023)
62. **Honorary Morgan Lecture - Texas Christian University (Invited Named Lecture Series):** *Nanotechnology for life sciences applications.* Fort Worth, Texas (January 2023)
63. **Weber Meeting (Invited):** *Imaging neuromodulators with near infrared nanosensors.* Punta Del Este, Uruguay (January 2023)
64. **Atlantic Basin Conference on Chemistry (Invited):** *Imaging neuromodulators with near infrared nanosensors.* Marrakesh, Morocco (December 2022)
65. **Colorado State Department of Plant Biology (Invited):** *Nanoparticles for the delivery of nucleic acids and proteins in plants.* Fort Collins, CO (November 2022)
66. **Frontiers of Neurophotonics (Invited):** *Imaging neuromodulators with near infrared nanosensors.* Quebec City, QC (October 2022)
67. **Stanford University Department of Chemical and Biomolecular Engineering (Invited):** *Nanoparticles for the delivery of nucleic acids and proteins in plants.* Stanford, CA (September 2022)
68. **Nano DDS (Invited):** *Nanoparticles for the delivery of nucleic acids and proteins in plants.* Chapel Hill, NC (September 2022)
69. **Johns Hopkins University Department of Chemical and Biomolecular Engineering (Invited):** *Nanoparticles for the delivery of nucleic acids and proteins in plants.* Baltimore, MD (September 2022)
70. **WONTON 2022 (Invited):** *Carbon nanotubes to image neuromodulators in the brain.* Madison, WI (July 2022)
71. **Frontiers of Genome Engineering (Invited):** *Nanomaterials enable the delivery of genetic information into plants without transgene integration.* Seoul, South Korea (June 2022)
72. **Dopamine 2022 (Invited):** *Dopamine imaging with near infrared nanosensors.* Lyon, France (June 2022)
73. **Electrochemical Society Meeting B02 Session (Invited):** *Protein Corona Formation on Hard and Polymeric Nanoparticles – Towards Understanding Biocompatibility, Biodistribution, and Efficacy.* Vancouver, Canada (May 2022)

74. **Lawrence Berkeley National Laboratory Molecular Foundry Seminar (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Berkeley, CA (May 2022)
75. **University of Illinois at Urbana Champaign Materials Science Department Seminar (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Urbana, IL (February 2022)
76. **University of California Riverside Department of Plant Biology (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Riverside, CA (April 2022)
77. **Basal Ganglia Gordon Research Conference (Invited):** *Near Infrared Imaging of Neurotransmission in the Brain*. Ventura, CA (March 2022)
78. **University of British Columbia Department of Chemistry Seminar (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Vancouver, British Columbia (February 2022)
79. **North Carolina Biotechnology Center (NCBC) (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Raleigh, NC (January 2022)
80. **NYU Abu Dhabi Department of Chemistry (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants*. Abu Dhabi, United Arab Emirates. (November 2021)
81. **Genentech Seminar Series (Invited):** *Diverse solutions for life's most challenging problems – from nanotechnology to inclusion and belonging in STEM*. San Francisco, CA. (August 2021)
82. **Reliance Industries Biofuel and Synthetic Biology Seminar Series (Invited):** *Nanomaterials Engineering for Biomolecule Delivery to Plants*. Mumbai, India. (June 2021)
83. **IEEE Nanotechnology Council (Invited):** *Nanomaterials-based extraction of SARS-CoV2 viral RNA*. San Francisco, CA. (June 2021)
84. **NT21: International Conference on the Science and Application of Nanotubes and Low-Dimensional Materials (Invited):** *Carbon Nanotubes Enable Delivery of Biomolecules to Plants Without Transgene Integration*. Houston, TX. (June 2021)
85. **ACS Innovation in Measurement Science Symposium (Invited Keynote):** *Nanomaterials for Imaging Neuromodulation in the Brain*. Boston, MA. (June 2021)
86. **University of Minnesota NIH Chemistry-Biology Interface Research Symposium. (Invited):** *Nanomaterials Engineering for Biomolecule Delivery to Plants*. Minneapolis, MN. (May 2021)
87. **ECS 239th Meeting - 2021 - Carbon Nanostructures in Medicine and Biology Symposium (Invited):** *A Protein Corona-Based Design Strategy for Carbon Nanotube Sensors*. Chicago, IL. (May 2021)
88. **ECS 239th Meeting - 2021 - 2020 Nanocarbons Division SES Young Investigator Award (Invited):** *Nanomaterials Engineering to Probe and Control living Systems*. Chicago, IL. (May 2021)
89. **UCLA Department of Chemistry and Biochemistry Seminar (Invited):** *Tiny things to engineer solutions for life's big problems*. Los Angeles, CA. (May 2021)
90. **3M Seminar Series (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems*. St. Paul, MN. (April 2021)
91. **University of Florida Department of Chemical Engineering Seminar (Invited):** *Nanomaterials to probe and control biological systems*. Gainesville, FL. (April 2021)
92. **University of Cincinnati Chemistry (Invited):** *Tiny things to engineer solutions for life's big problems*. Cincinnati, OH. (April 2021)
93. **Rowan University Physics Department Seminar (Invited):** *Tiny things to engineer solutions for life's big problems*. Glassboro, NJ. (March 2021)
94. **Carnegie Mellon University Department of Materials Science and Engineering Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems*. Pittsburgh, PA. (February 2021)
95. **Harvard University School of Engineering and Applied Sciences Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems*. Pittsburgh, PA. (January 2021)

96. **University of California Riverside Plant Sciences Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Riverside, CA. (January 2021)
97. **Max Planck Institute of Biochemistry (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Munich, Germany. (January 2021)
98. **Corteva Plant Breeding, Genetics, and Biotechnology (PBGB) symposium, Michigan State University (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* East Lansing, MI. (December 2020)
99. **University of California Berkeley Department of Molecular and Cellular Biology Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Berkeley, CA. (December 2020)
100. **Pacifichem 2020 (Invited):** *Imaging Striatal Dopamine Release with a Non-Genetically Encoded Near- Infrared Fluorescent Nanosensor.* Honolulu, HI. (December 2020) *Postponed due to covid-19
101. **Pacifichem 2020 (Invited):** *Carbon Nanotubes Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants.* Honolulu, HI. (December 2020) *Postponed due to covid-19
102. **Plant Sciences Institute, Israeli National Center for Genome Editing in Agriculture (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Rishon, Israel (November 2020)
103. **Naval Research Laboratory Center for Bio/Molecular Science and Engineering (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* (November 2020)
104. **Sustainable Nanotechnology Organization Meeting (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Virtual meeting. (November 2020)
105. **ACS Nano Rising Star Symposium (Invited):** *Engineering Nanomaterials for Biotechnology.* Beijing, China. (November 2020)
106. **NANO FOR AGRI 2020: Application of Nanotechnology for Sustainable, Productive and Safer Agriculture and Food Systems, TERI-Deakin Nanobiotechnology Centre 2020 (Invited):** *Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants.* Gurugram, India. (November 2020)
107. **AIChE Annual Meeting, Bionanotechnology Division (Invited Plenary):** *Nanomaterials Engineering to Probe and Control Living Systems.* San Francisco, CA. (November 2020)
108. **Carnegie Mellon University Department of Chemical Engineering Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Pittsburgh, PA. (November 2020)
109. **AIChE Annual Meeting, Food, Pharmaceutical, and Bioengineering Division (Invited Plenary):** *Imaging Striatal Dopamine Release with a Non-Genetically Encoded Near-Infrared Fluorescent Nanosensor.* San Francisco, CA. (November 2020)
110. **UNC Eshelman School of Pharmacy – Rising Stars in Drug Delivery and Novel Carriers Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Chapel Hill, NC. (November 2020)
111. **AIChE Annual Meeting, Education Division (Invited):** *Integration of Professional Development Practices in Doctoral and Postdoctoral Training – Approaches for Supporting Career Navigation in Chemical Engineering.* San Francisco, CA. (November 2020)
112. **Rice University Department of Bioengineering Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Houston, TX (October 2020)
113. **NIMH 2020 Symposium “Advancing Technologies to Investigate Mechanisms of Gut-Microbiota-Brain Interaction (Invited):** *Imaging Neuromodulators with Near Infrared Nanosensors.* Stockholm, Sweden (October 2020)
114. **Plant Genome Editing Symposium – Society for the Advancement of Chicanos and Native Americans in Science, SACNAS (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Long Beach, CA. (October 2020)
115. **4th International Conference on Plant Synthetic Biology, Bioengineering, and Biotechnology (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* College Copenhagen, Denmark. (October 2020)

116. **Texas A&M Genome Editing Symposium (Invited Keynote):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* College Station, TX. (October 2020)
117. **8th Plant Genomics & Gene Editing Congress (Invited Keynote):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Raleigh, NC. (October 2020) *Postponed due to covid-19
118. **2020 Frontiers in Neurophotonics Conference (Invited):** *Imaging neuromodulation with synthetic near-infrared nanosensors.* Quebec City, QC. (October 2020) *Canceled due to covid-19
119. **Department Biomedical Engineering at City College New York Seminar (Invited):** *Nanotechnologies for life's big problems.* New York, NY. (September 2020)
120. **ETH Zurich Department of Biology (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Zurich, Switzerland. (September 2020)
121. **SciX 2020 Conference (Invited Keynote):** *Emerging Leader in Molecular Spectroscopy: Nanomaterials Engineering for Life Science Applications.* Sparks, NV. (September 2020)
122. **Pennsylvania State University Department of Biology Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* State College, PA. (September 2020)
123. **Mid Atlantic Plant Molecular Biology Society Meeting (Invited Named Keynote - The Leslie Wanner Keynote speaker):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Baltimore, MD. (August 2020)
124. **2020 ACS National Meeting, JACS Spotlight on Chemistry from Bench to Market (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* San Francisco, CA. (August 2020)
125. **2020 Biological Physics/Physical Biology virtual seminar series (Invited):** *Tiny things to engineer solutions for life's big problems,* Virtual Seminar (July 2020)
126. **Carnegie Plant Cell Atlas (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Stanford, CA. (June 2020)
127. **2020 Gordon Research Conference on Nanotechnology in Food & Agriculture (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Manchester, NH. (June 2020) *Canceled due to covid-19
128. **Monitoring Molecules in Neuroscience (Invited):** *Imaging Dopamine in Huntington's Disease Neurodegeneration and Treatment.* Lyon, France (June 2020) *Canceled due to covid-19
129. **Carnegie Institute Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Stanford, CA (May 2020)
130. **Dopamine 2020 (Invited):** *Imaging Striatal Dopamine with a Near-Infrared Fluorescent Nanosensor.* Montreal, QC, Canada (May 2020) *Canceled due to covid-19
131. **2020 ECS Nanocarbons Division Young Investigator Award Symposium (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Montreal, QC, Canada (May 2020) *Canceled due to covid-19
132. **PROTEO 2020 Annual Symposium, Université Laval (Invited Keynote):** *Imaging Intercellular Communication with Synthetic Optical Probes.* Quebec City, QC, Canada (May 2020)
133. **2020 West Coast Innovation Forum (Invited):** *Breakthroughs in biotechnology.* Davis, CA (April 2020) *Canceled due to covid-19
134. **MIT Chemical Engineering Seminar (Invited – Student-selected invited speaker):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Cambridge, MA (April 2020)
135. **Cornell University Chemical Engineering Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Ithaca, NY (April 2020)
136. **University of Rhode Island Department of Chemical Engineering Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Kingston, RI (March 2020) *Canceled due to covid-19
137. **University of Georgia Department of Plant Biology Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Athens, GA (March 2020) *Canceled due to covid-19

138. **7th International Winterschool on Bioelectronics, BioEL2020 (Invited):** *Nanomaterials for Neuromodulator Imaging.* Kirchberg in Triol, Austria (March 2020) *Canceled due to covid-19
139. **RIKEN Chemistry and Plant Biology Symposium (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Tokyo, Japan (March 2020) *Canceled due to covid-19
140. **2020 Basal Ganglia Gordon Research Conference Discussion Leader (Invited):** *New tools and trends for imaging neuromodulation.* Ventura, CA (March 2020) *Canceled due to covid-19
141. **UC Santa Barbara Department of Chemistry Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Santa Barbara, CA (March 2020)
142. **National Academies of Sciences US-UK Scientific Forum on Sustainable Agriculture (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Washington, DC (March 2020)
143. **San Francisco Neurological Society Annual Meeting (Invited):** *Imaging neuromodulation with synthetic nanosensors.* Monterrey, CA (March 2020) *Canceled due to covid-19
144. **PittConn 2020 (Invited):** *A near-infrared fluorescent nanosensor enables high spatial resolution imaging of dopamine release in striatal brain tissue.* Pittsburg, PA (March 2020) *Canceled due to covid-19
145. **University of Tennessee Knoxville Department of Agricultural Synthetic Biology Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* Knoxville, TN (February 2020)
146. **Chan-Zuckerberg Biohub Deep Imaging Conference (Invited):** *Challenges and Opportunities for Imaging Neuromodulation.* San Francisco, CA (January 2020)
147. **Penn State Department of Plant Biology Seminar (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* State College, PA (January 2020)
148. **Plant Animal Genomics (PAG) Conference, Bayer Inc Session on Transgenic Technology for Agriculture (Invited):** *Nanomaterials enable delivery of genetic material to plants without transgene integration.* San Diego, CA (January 2020)
149. **2020 UC San Diego Cell and Molecular Genetics Symposium (Invited):** *Delivery of Genetic Material to Plants without Transgene Integration.* La Jolla, CA (January 2020)
150. **NIH Chemogenetic Innovations in the Manipulation and Monitoring of Labeled Neurons Workshop (Invited):** *Probes and Activity Monitoring of Brain Neuromodulation.* Washington, DC (December 2019)
151. **NSF Nanoscale Science and Engineering Grantees Conference (Invited):** *Understanding Brain Neurochemistry: Imaging Neuromodulators with High Spatiotemporal Resolution.* Alexandria, VA (December 2019)
152. **Corteva, Inc. Company Seminar Series (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Johnston, IA (December 2019)
153. **Stanford University Materials Science Department Seminar (Invited):** *Nanotechnologies for life's big problems.* Stanford, CA (December 2019)
154. **Materials Research Society (MRS): Smart Materials, Devices, and Systems to Interface with Plants and Microorganisms (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Boston, MA (December 2019)
155. **The American University in Cairo (Invited):** *Understanding Brain Neurochemistry: Imaging Neuromodulators with High Spatiotemporal Resolution.* Cairo, Egypt (November 2019)
156. **International Tropical Agriculture Conference (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Brisbane, Australia (November 2019)
157. **Society for the Advancement of Chicanos and Native Americans In Science (Invited):** *Tiny Solutions to Help Solve Life's Big Problems.* Honolulu, HI (October 2019)
158. **Rijk Zwaan, Inc. Company Seminar Series (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Berkeley, CA (October 2019)

159. **Koc University Department of Chemical Engineering Seminar (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Istanbul, Turkey (October 2019)
160. **Istanbul Technical University International Biology and Genetics Congress (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Istanbul, Turkey (October 2019)
161. **Pairwise, Inc. Company Seminar Series (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Raleigh, NC (September 2019)
162. **ACS Talented Twelve Symposium (Invited):** *Tiny Solutions to Help Solve Life's Big Problems.* San Diego, CA (August 2019)
163. **Danforth Plant Science Center (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Saint Louis, MO (August 2019)
164. **American Society for Plant Biology Plenary Keynote (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* San Jose, CA (August 2019)
165. **McGill University Faculty of Engineering (Invited):** *DNA and RNA Delivery with Nanomaterials in Mature Plants.* Montreal, QC (July 2019)
166. **RIKEN Center for Brain Science (Invited):** *Nanotechnology – Understanding the Brain in Both Health and Disease.* Tokyo, Japan (July 2019)
167. **Terramera, Inc. Company Seminar Series (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery Without DNA Integration in Mature Plants.* Vancouver, BC (July 2019)
168. **Parkinson's Disease Gordon Research Conference (Invited):** *Imaging Striatal Dopamine Release Using a Non-Genetically Encoded Near-Infrared Fluorescent Nanosensor.* Newry, ME (June 2019)
169. **Bioelectronics Gordon Research Conference (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Andover, NH (June 2019)
170. **Society for In Vitro Biology (Invited Keynote):** *High Aspect Ratio Nanomaterials Enable Delivery of Functional Genetic Material Without DNA Integration in Mature Plants.* Tampa, FL (June 2019)
171. **Electrochemical Society Meeting (Invited):** *DNA Library Evolution of Carbon Nanotube Molecular Recognition.* Dallas, TX (May 2019)
172. **Umeå Plant Science Centre Seminar (Invited):** *High Aspect Ratio Nanomaterials Enable Delivery of Functional Genetic Material Without DNA Integration in Mature Plants.* Umeå, Sweden (May 2019)
173. **2019 Yale Chemical Biology Symposium (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* New Haven, CT (May 2019)
174. **UC Berkeley Department of Bioengineering Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* Berkeley, CA (May 2019)
175. **AIChE Midwest Meeting (Invited Keynote):** *Nanomaterials Engineering to Probe and Control Living Systems.* Chicago, IL (March 2019)
176. **Rockefeller University Center for Studies in Physics and Biology Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* New York, NY (February 2019)
177. **Memorial Sloan Kettering Cancer Center of Molecular Imaging and Nanotechnology Seminar (Invited):** *Nanomaterials Engineering to Probe and Control Living Systems.* New York, NY (February 2019)
178. **UCSD Plant Biology Symposium (Invited):** *Genetic Transformation of Plants with Nanoparticles.* San Diego, CA (January 2018)
179. **University of Washington Department of Chemical Engineering Seminar (Invited):** *Imaging Striatal Dopamine Release Using a Non-Genetically Encoded Near-Infrared Fluorescent Nanosensor.* Seattle, WA (January 2019)
180. **Kavli Sensing the Future Workshop (Invited):** *Imaging Striatal Dopamine Release Using a Non-Genetically Encoded Near-Infrared Fluorescent Catecholamine Nanosensor.* Houston, TX (December 2018)

181. **American Institute of Chemical Engineers (Invited):** *Exciton Engineering for Brain Nanosensor Delivery and Imaging of Modulatory Neurotransmitters*. Pittsburgh, PA (October 2018)
182. **University of Washington Department of Chemistry Seminar (Invited):** *Infrared Nanosensors for Imaging Dopamine Dynamics in the Brain*. Seattle, WA (October 2018)
183. **KAUST Plant Sciences Seminar (Invited):** *High Aspect Ratio Nanomaterials Enable Transgene Expression and Silencing in Plants*. Thuwal, Saudi Arabia (September 2018)
184. **Asilomar Bioelectronics Symposium (Invited):** *Imaging Brain Neurochemistry with Non-Genetically Encoded Near-Infrared Fluorescent Nanosensors*. Carmel, CA (September 2018)
185. **American Chemical Society Early Career Investigators in Biological Chemistry:** *Imaging Brain Neurochemistry with Non-Genetically Encoded Near-Infrared Fluorescent Nanosensors*. Boston, MA (August 2018)
186. **American Chemical Society Applied Nanotechnology for Food & Agriculture:** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery and Transgene Expression or Silencing in Mature Plants*. Boston, MA (August 2018)
187. **Gordon Research Conference: Optogenetic Approaches to Understanding Neural Circuits and Behavior (Invited):** *Imaging Striatal Dopamine Release using a Non-Genetically Encoded Near-Infrared Fluorescent Catecholamine Nanosensor*. Newry, ME (July 2018)
188. **Northwestern University, Feinberg School of Medicine Seminar (Invited):** *Optical Detection of Striatal Dopamine with a Near-Infrared Fluorescent Catecholamine Nanosensor*. Evanston, IL (June 2018)
189. **University of California Davis, Chemical Engineering Department Seminar (Invited):** *Nanomaterials Engineering for Life Sciences Applications*. Davis, CA (May 2018)
190. **Electrochemical Society Meeting (Invited):** *High Aspect Ratio Nanomaterials Enable Transgene Expression and Silencing in Plants*. Seattle, WA (May 2018)
191. **DuPont Plant Sciences Symposium (Invited):** *High Aspect Ratio Nanomaterials Enable Transgene Expression and Silencing in Plants*. Berkeley, CA (April 2018)
192. **Innovative Genomics Institute (Invited):** *High Aspect Ratio Nanomaterials Enable Biomolecule Delivery into Plants*. Berkeley, CA (April 2018)
193. **University of North Carolina at Chapel Hill, Biomedical Engineering Department Seminar (Invited):** *Nanotechnology for Life Sciences Applications*. Chapel Hill, North Carolina (March 2018)
194. **US-Brazil Workshop on Biosensors: Bioanalytics to Device Integration (Invited):** *Neurochemical Imaging for Validation of Antidepressants*. Sao Paulo, Brazil (November 2017)
195. **AVS 2018 National Meeting, Biointerfaces Division (Invited):** *Visualization of Neuromodulation with Infrared Fluorescence Microscopy*. Tampa, FL (November 2017)
196. **New York University, Lagone Medical Center Seminar (Invited):** *Imaging Brain Neuromodulation with Infrared Nanosensors*. New York, NY (October 2017)
197. **SciX Conference (Invited):** *Engineering Excitons for Imaging Neuromodulation in the Brain*. Reno, NV (October 2017)
198. **University of San Francisco, Physics Department Seminar (Invited):** *Tiny Tools to Solve Big Biomolecular Challenges*. San Francisco, CA (September 2017)
199. **International Rice Research Institute, IRRI Seminar (Invited):** *Plant Genome Editing via Nanomaterial-Scaffolded Biomolecule Delivery*. Los Banos, Philippines (July 2017)
200. **Inari, Inc (Invited):** *Passive Mature Plant Transformation with High Aspect Ratio Nanoparticles*. Boston, MA (June 2017)
201. **Georgetown University Physics Department Seminar (Invited):** *Engineering and Imaging Excitons for Brain Imaging of Modulatory Neurotransmitters*. Washington, DC (June 2017)
202. **Electrochemical Society Meeting 2017 (Invited):** *Nanosensors for Modulatory Neurotransmission Imaging*. New Orleans, LA (June 2017)

203. **Gettysburg College Physics Department Seminar (Invited):** *Exciton Engineering for Imaging Neuromodulatory Transmission*. Gettysburg, PA (March 2017)
204. **International Conference on Plant Synthetic Biology and Bioengineering (Invited):** *Nanoparticles as Biomolecular Cargo Transporters in Plants*. Miami, FL (December 2016)
205. **George Mason University Physics Department Seminar (Invited):** *Imaging Neurochemistry with Synthetic Fluorescent Nanosensors*. Washington, DC (October 2016)
206. **Quantitative Cell Profiling Symposium:** *Single-Molecule Detection of Protein Efflux from Isolated Microorganisms using Fluorescent Single Walled Carbon Nanotube Sensor Arrays*. Osaka, Japan (September 2016)
207. **Lawrence Berkeley National Laboratory Molecular Foundry (Invited):** *Nanoparticle-Polymer Conjugates for Near-Infrared Biomolecular Detection*. Berkeley, CA (August 2016)
208. **New York University Langone Medical Center Seminar (Invited):** *Synthetic Infrared Nanosensors for Modulatory Neurotransmitters*. New York, NY (July 2016)
209. **University of Texas El Paso Chemistry Department Seminar (Invited):** *Molecular Predictions and Computational Approaches to Understanding Chemical Neurotransmission*. El Paso, TX (April 2016)
210. **Brain and Behavior Research Foundation Spring Foundation (Invited):** *Understanding How Brain Cells Communicate – And Sometimes Miscommunicate*. West Palm Beach, FL (February 2016)

RESEARCH EXPERIENCE

- **Massachusetts Institute of Technology:** Chemical Engineering
Michael Strano, Primary Advisor. (2013 – 2016) – [Strano Research Group](#)
Synthesis of nano-scale optical sensors and development of molecular fluorescence imaging microscopes.
- **University of Illinois Graduate Student:** Chemical Physics
Yann Chemla, Primary Advisor. (2007 – 2012) – [Chemla Lab](#)
Design and construction of single-molecule instrumentation: optical traps and fluorescence microscopy. I studied telomerase protein systems and DNA-nanotube interactions.
- **Junior Nanotechnology Network Fellow:** Technische Universität München
Ludwig-Maximilians-Universität. (2010 – 2010)
I worked with Don Lamb, Matthias Rief, Hendrik Dietz, and Hermann Gaub to develop techniques for probing biological systems and nanomaterials at the single-molecule scale.
- **University of Illinois Business Consulting:** Consultant. (January 2010 – May 2010)
Managed a team of doctoral and business students in an interdisciplinary setting to perform market research analysis for the creation of a startup technological company.
- **Osaka University Visiting Research Fellow:** Nanobiology
Toshio Yanagida laboratory. (2009) – [Yanagida Soft Biosystem Group](#)
My research in the Yanagida group centered on optimizing sub-diffraction limited imaging (FIONA) for protein-DNA dynamic studies with Total Internal Reflection Fluorescence Microscopy.
- **Duke University Research Assistant:** Pharmacology & Cancer Biology
Madan Kwatra laboratory. (2007) – [Kwatra Laboratory](#)
My research in the Kwatra group was based on a quantitative study of G protein-coupled receptors as they relate to postoperative delirium in elderly patients.
- **University of North Carolina at Chapel Hill Research Assistant:** Biochemistry and Biophysics.
Brian Kuhlman laboratory. (2002 – 2006) – [Kuhlman Lab](#)
My research in the Kuhlman group centered on the study of protein - protein interaction energies in the ubiquitin protein network by expressing protein mutants and performing protein kinetic assays.

TEACHING EXPERIENCE

- **NEUROSC 152: Neurotechnology** (Spring 2025) – [Syllabus](#)

University of California, Berkeley department of Neuroscience

Topics covered neurotechnologies to study neurobiology including extracellular electrophysiology, neuronal recording and stimulation, wireless communication, electron and fluorescence microscopy, neurochemical activity imaging and neurochemical imaging.

- **CBE 141: Chemical Engineering Thermodynamics: Instructor** (Spring 2017, 2018) – [Syllabus](#)
University of California, Berkeley department of Chemical and Biomolecular Engineering
Topics covered thermodynamic behavior of pure substances and mixtures, properties of solutions, phase equilibria, thermodynamic cycles, and chemical equilibria for homogenous and heterogenous systems.
- **CBE 182: Nanoscience and Engineering Biotechnology: Instructor** (Fall 2017, Fall 2018, Spring 2020, Fall 2021) – [Syllabus](#)
University of California, Berkeley department of Chemical and Biomolecular Engineering
Topics covered molecular biology, protein folding thermodynamics, protein and enzyme engineering, recombinant DNA technology, nanomaterials synthesis, nanodevices, nanotechnology.
- **CBE 154: Unit Operations for Chemical Engineering: Instructor** (Fall 2016, Spring 2019) – [Syllabus](#)
University of California, Berkeley department of Chemical and Biomolecular Engineering
This undergraduate course is one of two capstone courses in the chemical engineering curriculum, with a focus on experimental design for topics in thermodynamics and transport phenomena.
- **NEUROSC 290A: Neuroscience Research Methods and Professional Development: Co-instructor** (Fall 2017, Fall 2018)
University of California, Neuroscience Graduate Program
This graduate course is offered to first-year doctoral students in the UC Berkeley neuroscience graduate program. Topics covered include neuroscience research methods including classical experimental tools, data analysis, and data interpretation.
- **MCB 293C** (Spring 2019)
University of California, Berkeley department of Molecular and Cellular Biology
This graduate course covers topics in research best practices and responsible conduct in research drawing from case studies from the Association of American Medical Colleges and the NIH.
- **Clubes de Ciencias (CdeC) Mexico: Instructor** (2014 - 2015) – [Course website](#)
Universidad Nacional Autónoma de México
Designed and taught an optics course for low-income university freshmen students in Ensenada, Mexico. Worked with Universidad Nacional Autónoma de México to remotely serve as a mentor for students.
- **Engineering Nanotechnology Co-Instructor:** (Fall 2013 & 2015)
Massachusetts Institute of Technology department of Chemical Engineering
Developed course materials for imaging and materials passivation techniques used in the field of engineering and nanomaterials science. Gave course lectures and prepared course handouts.
- **Center for the Physics of Living Cells Instructor:** (Summers 2009 – 2011)
University of Illinois at Urbana Champaign department of Physics
Led week-long intensive course for visiting graduate students and scientists, on the construction and use of a single-molecule total internal reflection fluorescence microscope and single-molecule optical trap.
- **Junior Nanotechnology Network Instructor:** (Summer 2010)
University of Illinois at Urbana Champaign department of Physics
Instructed 15 graduate students on the construction and biological applications of single-molecule fluorescence and force microscopy.
- **Advanced Thermodynamics and Statistical Mechanics Teaching Assistant:** (Spring 2008)
University of Illinois at Urbana Champaign department of Chemistry
Gave upper-level undergraduate student lectures, supplemental instruction sessions.
- **General Chemistry Teaching Assistant:** (Fall 2007)
University of Illinois at Urbana Champaign department of Chemistry
- **Introductory Electrodynamics Teaching Assistant:** (Fall 2006 – 2007)
University of Illinois at Urbana Champaign department of Physics

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- **Introductory Mechanics Teaching Assistant:** (Spring 2006 – 2007)
University of North Carolina at Chapel Hill department of Physics
- **General Chemistry Laboratory Teaching Assistant:** (Fall 2006)
University of North Carolina at Chapel Hill department of Chemistry

CERTIFICATIONS

2010	Certified LabVIEW Associate Developer (CLAD)
2009	Certificate in Business Administration, University of Illinois College of Business

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Institute of Chemical Engineers
- American Society for Cell Biology
 - Minority Affairs Committee
- Biophysical Society
- Society for the Advancement of Chicanos and Native Americans in Science
- Electrochemical Society
- American Chemical Society
- American Physical Society
- Biomedical Engineering Society

TRAINEES

(1) POSTDOCTORAL SCHOLARS

- **Current**
 - Jack Tulyag (March 2026 – present)
 - Shoichi Nishitani (June 2021 – present)
 - Roxana Coreas (October 2022 – present)
 - Kirill Schenstniy (May 2026 - present)
 - Lining Zheng (May 2026 - present)
 - Anni Shi (August 2025 – present)
 - Brendan Butler (October 2025 - present)
 - Hideaki Uchida (December 2025 - present)
- **Former**
 - Natsumi Komatsu (February 2023 – May 2026)
Current affiliation: [Assistant Professor, University of Illinois Urbana Champaign](#)
 - Jaewan Mun (February 2021 – June 2025)
 - Kevin Ao (August 2023 – September 2025)
 - Dabin Yim (April 2022 – April 2025)
Current affiliation: Illinois State Water Survey Researcher, University of Illinois Urbana Champaign
 - Eduardo Gonzales Grandio (April 2019 – May 2021)
Current affiliation: [Principal Investigator at National Center for Biotechnology](#)
 - Juliana de Lima Matos (June 2021 – July 2024)
 - Mohammed Moein Safaee (May 2021 – May 2022)
Current affiliation: Principal Scientist at AbbVie
 - Eduardo Gonzales Grandio (April 2019 – December 2021)
Current affiliation : Principal Scientist at [National Center for Biotechnology](#)
 - Ian McFarlane (February 2016 – April 2021)
Current affiliation : Senior Diagnostics Software Engineer at [KLA](#)
 - Sanghwa Jeong (February 2016 – January 2021)
Current affiliation : Assistant Professor, [Pusan National University, School of Biomedical Engineering](#)
 - Huan Zhang (February 2016 – July 2020)
Current affiliation: Assistant Professor, [Jinan University Department of Chemistry and Materials Science](#)
 - Travis del Bonis O'Donnell (February 2016 – August 2020)
Current affiliation: Scientist, [Quantapore](#)

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- Younghun Sung (February 2016 – April 2019)
Current affiliation: Samsung Electronics Semiconductor R&D Institute
- David Pieraski (March 2016 – December 2018)
Current affiliation: Advanced Health Fellow, Department of Veterans Affairs, Palo Alto
- Junchen Wu (March 2016 – May 2017)
Current affiliation: Assistant Professor, [East China University of Science and Technology](#)

(2) GRADUATE STUDENTS

• Current

- Sophia Tomatz (May 2022 – present)
- Teng-Jui Lin (January 2024 – present)
- Kylee Hillman (May 2024 - present)
- Alfonso Restrepo (May 2025 – present)
- Wakana Kani (October 2025 – present)

• Former

- Henry Squire (August 2021 – July 2026)
- Jaquesta Adams (May 2020 – July 2026)
- Elizabeth Voke (December 2020 – December 2025)
- Francis Ledesma (December 2019 – May 2024)
- Joshua Hubbard (December 2019 – May 2024)
- Madeline Klinger (August 2019 – May 2024)* Co-advised with Linda Wilbrecht
- Alison Lui (December 2018 – December 2023)* Co-advised with Kranthi Mandadapu
- Nicole Navarro (August 2019 – December 2023)
- Nicholas Ouassil (December 2018 – November 2023)
- Jeffrey Wang (December 2018 – August 2023)
- Gabriel Dorhliac (December 2016 – December 2022)* Co-advised with Aaron Streets
Current affiliation: Research Associate, SLAC National Accelerator Laboratory
- Sarah Yang (December 2017 – August 2022)* Co-advised with David Schaffer
Current affiliation: MIT Postdoctoral fellow, [Ed Boyden Lab](#)
- Chris Jackson (August 2019 – June 2022)
Current affiliation : [AAAS Science and Technology Policy Fellow](#)
- Francis Cunningham (December 2017 – June 2022)
Current affiliation : Scientist at [Berkeley Yeast](#)
- Natalie Goh (December 2017 – May 2022)
Current affiliation : Scientist at [Scribe Therapeutics](#)
- Rebecca Pinals (December 2016 – May 2021)
Current affiliation : [Assistant Professor, Stanford University Chemical Engineering](#)
- Darwin Yang (January 2016 – October 2020)
Current affiliation : Scientist, [Evolve Biotech](#)
- Gozde Demirer (January 2016 – June 2020)
Current affiliation: [Assistant Professor, Caltech Department of Chemical Engineering](#)
- Abraham Beyene (January 2016 – December 2019)
Current affiliation: Principal Investigator of the [Beyene Lab at the HHMI Janelia Research Campus](#).
- Linda Chio (January 2016 – April 2020)
Current affiliation: Research scientist at [Gordian Biotechnology](#).

(3) UNDERGRADUATE STUDENTS

• Current

- Catherine Alvarez
- Lasya Ayyagari
- Cambridge Bui-Nguyen
- Ethan Ho
- Bowen Hou
- Kallie Huynh
- Sofia Jacik
- Syed Usman Kashif

- Laura Kim
- Sumi Kim
- Chloe Liang
- Christian Joseph Dispo Del Rosario
- Shridavi Raghavan
- Nathaniel Schohn
- Praneel Shah
- Heidi Vasquez
- Hanni Yu

- **Former**

- Aarushi Mupparti
- Abhishek Jindal Aditham – Ph.D. student in Bioengineering at MIT
- Aishy Murali – Process Scientist, Boehringer Ingelheim
- Alexia Li – Graduate Student, Columbia Chemical Engineering
- Allie Jiang
- Amad Jalil -
- Amanda Shiu -
- Ami Thakrar – Ph.D. student in Biomedical Engineering at Harvard
- Ankita Biyani- Berkeley Student
- Andrew Lee -
- Andrew Puglise – PhD Student and the University of Michigan
- Arismel Tena Meza- Ph. D. Student in Organic Chemistry at UCLA
- Armine Dingilian – Ph.D. student in Biophysics at UIUC
- Ashvin Irrinki- Clinical Operations Intern at Boomerang Medical
- Autumn Lee – Graduate student at Columbia University
- Ava Moudi- PhD Student in Molecular Biology at Princeton
- Billie Zeng
- Bora Ozcan – Research Specialist at Scribe Therapeutics
- Carl Atik - Manufacturing Engineer 2 @ Penumbra
- Cerise Wong- PhD Student in Chemical Engineering, Columbia University
- Chantel Mabubay Martino- Bioprocess Operations @ Genentech
- Chelsey (Gaeun) Lee
- Christopher Acosta- UC Berkeley Laboratory Manager, Kumar/Streets Labs
- Cindy Zhou – Ph.D. student in Chemical Engineering at MIT
- Danya Hassan- M.S. Student in Human Genetics and Genomic Data Analytics
- Deverin Smith - Research Associate @ Aviva Systems Biology
- Diane Kim
- Dorothy Li – Clinical Lab Associate at Lucence
- Edward Lien
- Edward Sun
- Eric Liu
- Eric Tindall
- Esther Leem
- Evan Vail
- Feiyang Chen-
- Francesca Giordani – Medical Student
- Ghida El Bsat
- Hanni Yu
- Jamie Lynn Phan- Berkeley Student, Optometry Assistant
- Jason Morales
- Joseph Adar
- Justin Brewer- PhD Student in Chemical and Biomolecular Engineer at University of Delaware
- Justin Gardner
- Kate Verhagen
- Kaushik Seshadri
- Kayleigh Fort

- Kenneth Celis
- Kyle De Mathias – Graduate Student at Stanford
- Kyle Shun
- Laura Kim
- Lee Puckett
- Lillian Hiraoka
- Marcus Varni
- Mariana Vaca
- Matthew Pham
- Megan Teresa Tandean
- Michael Ni
- Miles Duong
- Minjae Kim- Chemical Analyst at the Republic of Korea CBRN Defense Command
- Natasha Raut
- Natalie Oh
- Navid Boozarpour – Process Associate, Clara Foods
- Nicole Carll- External Quality at Genentech
- Nicole Sugino
- Nikitha Sridhar
- Octavio Arias-Soto
- Padma Muppirala
- Rachel (Jiaxuan) Zhao- Research Staff at Columbia University
- Rigney Miller
- Roger Chang – Ph.D student in Chemical Engineering at UIUC
- Salwan Butrus – Ph.D student in Chemical Engineering at UC Berkeley
- Sejal Krishnan
- Siddharth Mohapatra
- Siri Tantry
- Siyue Yang- Graduate Student at Scripps Research
- Sonya Mengel
- Soungyun (Lucio)Yang
- Syed Usman Kashif
- Tanya Chaudhary – R&D Engineer at Apple, Biomedical Division
- Thalia Georgiou – Graduate Student at UCLA Biophysics
- Tiffany Unsulangi – Medical School at UCSF
- Tina Ye – Ph.D student in Chemical Engineering at Rice University
- Tong Ly
- William Nader
- Xavier Valez
- Xiaoqi Sun – Graduate Student, MIT Chemical Engineering
- Zirun Liang – Graduate Student, MIT Chemical Engineering

(4) HIGH SCHOOL STUDENT MENTEES

Current

- Alzbeta Markov
- Wesley Wu
- Dylan Golmb
- Akhil Sanapala Venkata
- Cindy Donguyen

Former

- Kelsey Nguyen
- Julius Kim
- Malia Nishida
- Aditi Lyer
- Kaiyan Liu
- Arvin Deshmukh

- Josh Kim
- Joshua Zhang
- Julia Zhao
- Lauren Vidinha
- Madeline Haubert
- Nawal Altoukhi
- Nicholas Ellis
- Prisha Rai
- Riya Jwalanna
- Damlanur Oztem
- Aaron Chirsa
- Maria Rutkowska
- Rachel Lou (see [Prof. Landry high school research mentee highlight in Nature Nanotechnology](#))
- Sarah Manoj
- Siddarth Mane
- Rachel Wang
- Jessica Zhang

LEADERSHIP AND SERVICE

- **Journal editor**
2022 - PNAS guest editor
- **Grant review panelist**
2022 - 2026 NIH NANO Grant review study section, October Panel (standing member)
2022 - NIH NANO Grant review study section, June Panel (standing member)
2022 - DOE Plant Biosystems Design Review, May panel (ad hoc)
2022 - NIH NANO Grant review study section, February Panel (standing member)
2021 - NSF Enabling Discovery through Genomics (EDGE) program (ad hoc)
2021 - NIH NANO Grant review study section, October Panel (standing member)
2021 - NIH NANO Grant review study section, June Panel (standing member)
2021 - NSF Phase I: Energy Storage and Other Technologies Panel (ad hoc)
2021 - NIH NANO Grant review study section, February Panel (standing member)
2020 - NSF Plant Genome Research Program (ad hoc)
2020 - NIH NANO Grant review study section, October Panel (standing member)
2020 - Phase I: Distributed Ledger & Other Innovative Technologies SBIR/STTR Phase I review panel
2020 - NIH NANO Grant review study section, February Panel (standing member)
2020 - USDA National Institute of Food and Agriculture panel on Nanotechnology for Agricultural and Food Systems
2020 - Phase I: COVID solutions and other Innovative Technologies II
2020 - SBIR Phase I: Assured - Securely sharing COVID19 information grant review
2019 - SBIR Technology Transfer grant review (R43/R44) (ad hoc)
2018 - NIH CMT grant review study section (ad hoc)
2018 - NSF SBIR/STTR grant review panelist (ad hoc)
2017 - NSF SBIR/STTR grant review panelist (ad hoc)
2016 - NSF CBET grant reviewer (ad hoc)
2016 - NIH BPNS grant review study section (ad hoc)
- **Proposal Committee for the formation of a Department of Neuroscience** (2021 – 2023)
Committee charged with the design and creation of a neuroscience department for the UC Berkeley Campus.
- **Diversity Equity and Inclusion Chair** (2019, 2022) **Member** (2019 – present)
DE&I representative and chair for the department of chemical and biomolecular engineering.
- **Robotics & Engineering for Youth: Faculty Advisor** (2017 - present)
Mentor for student group to expose K-8 students to engineering and computer science via hands-on lego league robotics and scratch programming.
- **Alliance for Diversity in Science and Engineering (ADSE): Faculty Advisor** (2017 - present)
Mentor and faculty advisor for ADSE, attended inaugural meeting, contribute to outreach and professional development events.

Markita Patricia del Carpio Landry

- **Alpha Chi Sigma Chemistry Fraternity: Faculty Mentor** (2016 - present)
Mentor for Alpha Chi Sigma, Sigma chapter. Serve as student mentor, speaker, and outreach.
- **Instructor, Cambridge Centre for International Research** (2022 – present)
Instructor and mentor for over 20 high school students in small group or one-on-one settings. Highlighted as a top teacher and top instructor on Zou *et al.* [*The potential for Academics to Inspire the Next Generation*](#). *Nature Nanotechnology* (2024)
- **Latino/a Association of Graduate Students in Engineering and Sciences at UC Berkeley (LAGSES): Faculty Mentor** (2016 - 2019)
Mentor for LAGSES students, speaker, panelist, and student-faculty liaison.
- **MIT Presidential Committee on Race and Diversity: Campus-wide elected postdoctoral representative** (2013 - 2016)
Representative for the postdoctoral body. Led efforts with MIT president Rafael Rief to encourage recruitment, retention, and promotion of underrepresented students, faculty, and staff on the MIT campus.
- **Society for the Advancement of Chicanos and Native Americans in Science (SACNAS): Founder, MIT** (2013 - 2016) **President, University of Illinois** (2010, 2011, 2012, Member 2008 – 2012)
Founded the first SACNAS chapter at MIT. Started a professional SACNAS chapter on campus.
- **MIT Postdoctoral Association: Diversity and Inclusion Chair** (2013 - 2016)
Serve as a representative and liaison for MIT minority postdocs. Lead negotiation efforts for postdoctoral wages and benefits. Organize career development events for minority postdocs.