
Home Address	498 Bantry St. Powell, OH 43065 (614) 330-9160
Work Address	N350 Scott Lab 201 W 19 th Ave Department of Mechanical and Aerospace Engineering (614) 292-2662

EDUCATION

Massachusetts Institute of Technology

Ph.D	Department of Mechanical Engineering	2009
Major	Program in Polymer Science and Technology	
Minor	Solid Mechanics	

The Ohio State University

M.S.	Department of Mechanical Engineering	2005
B.S.	Department of Mechanical Engineering	2005

PROFESSIONAL APPOINTMENTS

2009-2011	Alexander von Humboldt Postdoctoral Research Fellow, Technische Universität München
2011-2017	Assistant Professor, Mechanical & Aerospace Eng., The Ohio State University
2011-Present	Faculty Member, Biophysics Graduate Program, The Ohio State University
2017-2020	Associate Professor, Mechanical & Aerospace Eng., The Ohio State University
2020-Present	Professor, Mechanical & Aerospace Eng., The Ohio State University
2020-2023	Program Director, Mechanical Eng., The Ohio State University
2023-Present	Associate Chair for Research, Dept. of Mechanical and Aerospace Eng., The Ohio State University
2023-Present	Ralph W. Kurtz Chair in Mechanical Engineering, The Ohio State University

AWARDS & HONORS

Big Ten Academic Leaders Program Fellow	Big Ten Alliance	2022
Harrison Faculty Award for Excellence in Engineering Education	The Ohio State University College of Engineering	2021
American Institute of Medical and Biological Engineering (AIMBE) Fellow	AIMBE	2021
Lumley Interdisciplinary Research Award	The Ohio State University	2020
Fulbright Research Scholar Award	Fulbright Scholars Program	2018
Lumley Research Award	The Ohio State University	2017
People to Know in Science and Technology	Columbus Business First	2016
Kavli Fellow	Kavli Institute	2016

Moran Award for Teaching Excellence	The Ohio State University Dept of Mechanical and Aerospace Eng.	2015
NSF Career Award	National Science Foundation	2014
Pi Tau Sigma Above and Beyond Award	Ohio State Chapter of Pi Tau Sigma Mechanical Engineering Honorary	2013
Humboldt Postdoctoral Fellowship	Alexander von Humboldt Foundation	2010-2011
MIT Biomechanics Training Grant	MIT – Biological Engineering	2007-2009
PPST Award for Research Excellence	MIT Program in Polymer Science and Technology	2006
DuPont Presidential Fellowship	MIT – Mechanical Engineering	2005-2006

PUBLICATIONS (https://go.osu.edu/castro_google_scholar)

* indicates co-corresponding author, ** indicates members of Castro Lab, + indicates co-first authors

1. Ruiz, E.O., Neyra, K., Lopez, D., Chen, B., Paramasamy, D., Bizjak, Q., Halley, P.D., Wei, Y., Sotomayor, M., Poirier, M.G., *Mathur, D., *Castro, C.E., Pfeifer, W.G., Simple and rapid release of single-stranded DNA templates from double-stranded DNA sources, in preparation
2. **+Beshay, P., +Orsborn, Z., **+Kruse, M., Teng, T., *Castro, C.E., *Walter, B., DNA-based nanosensors for spatial detection of ion concentration gradients with tunable range and sensitivity, under review (preprint on bioRxiv: <https://www.biorxiv.org/content/10.1101/2025.10.16.682652v1>)
3. Bonin, K., **Wang, Y., Riveros, I., Chen, R.W., Zhang, B., Bundschuh, R., *Castro, C.E., *Poirier, M.G. Free energy spectroscopy reveals the mechanistic landscape of chromatin compaction, under review (preprint on bioRxiv: <https://www.biorxiv.org/content/10.1101/2025.08.13.670082v1>)
4. Duke, D., Sterling, S., **Teng, T., Altunina, A., Martynenko, I., Ke, Y., **Castro, C.E.**, Arya, G., Dynamic DNA Superstructures with Emergent Functions, *Nanoscale Horizons*, in press, doi:10.1039/D5NH00436E (2025)
5. Sterling, S., **Wei, Y., *Arya, G., *Castro, C.E., *Ke, Y., Emerging research on gene delivery to nucleus via DNA origami, *JACS Au*, in press, doi:10.1021/jacsau.5c00737 (2025)
6. Jergens, E., Srinivasan, N. G., **Kucinic, A., **Shahhosseini, **M., Kruse, M., Johnston-Halperin, E., Poirier, M.G., **Castro, C.E.**, Winter, J.O., Dynamic Actuation and Hierarchical Assembly of Iron Oxide-Coated DNA Origami, *ACS Applied Materials & Interfaces*, 17(28): 40986-40993 (2025)
7. **Lopez, D. M., **Castro, C.E.**, Sotomayor, M., *In-Silico* Analyses of Molecular Force Sensors for Mechanical Characterization of Biological Systems, *Biophysical Journal*, 124(5):829-843 (2025) (preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2024.07.17.603923v1>)
8. +Neuhoff, M., **+Wang, Y., **Vantangoli, N., *Poirier, M.G., *Castro, C.E., ***Pfeifer, W.G., Recycling Materials for Sustainable DNA Origami Manufacturing, *Nano Letters* 24(39): 12080–12087 (2024) (preprint on bioRxiv, <https://doi.org/10.1101/2024.06.05.596853>)
9. **+Roozbahani, G., +Colosi, P., +Oravec, A., Sorokina, E.M., **Pfeifer, W., Shokri, S., **Wei, Y., Didier, P., DeLuca, M., Arya, G., *Tora, L., *Lakadamyali, M., *Poirier, M.G., *Castro, C.E., Piggybacking functionalized DNA nanostructures into live cell nuclei, *Science Advances* 10(27): eadn9423 (2024) (preprint on bioRxiv, <https://doi.org/10.1101/2023.12.30.573746>)
10. DeLuca, M., Ye, T., Poirier, M.G., Ke, Y., **Castro, C.E.**, Arya, G., Mechanism of DNA origami folding elucidated by mesoscopic simulations. *Nature Communications*, 15: 3015 (2024) (preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2023.06.20.545758v1.full>)

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11. Kabtial, P., Robbins, A., Jergens, E., Castro, C.E., Winter, J.O., Poirier, M.G., Johnston-Halperin, E., Localized plasmonic heating for single-molecule DNA rupture measurements in optical tweezers, *Nano Letters*, 24(10): 3097-3103 (2024).
 12. Robbins, A., Hildebolt, H., Neuhoﬀ, M., **Beshay, P., Winter, J.O., **Castro, C.E.**, Bundschuh, R., Poirier, M.G. Cooperative control of a DNA origami force sensor, *Scientific Reports*, 14:4132 (2024) (preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2023.06.26.546608v1>)
 13. **Teng, T., Bernal-Chanchavac, J., Stephanopoulos, N., **Castro, C.E.** Construction of reconfigurable and polymorphic DNA origami assemblies with coiled-coil patches and patterns. *Advanced Science*, 2307257 (2024) (preprint on bioRxiv, <https://doi.org/10.1101/2023.09.23.559112>)
 14. **Wang, Y., Jin, X., ***Castro, C.E.**, Accelerating the Characterization of Dynamic DNA Origami Devices with Deep Neural Networks. *Scientific Reports*, 13: 15196 (2023) (preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2023.05.11.540408v1>)
 15. **Pfeifer, W.G., **Huang, C.H., Poirier, M.G., *Arya, G., ***Castro, C.E.** Versatile Computer Aided Design of Freeform DNA nanostructures and assemblies. *Science Advances*, 9(30): eadi069 (2023), preprint on bioRxiv <https://www.biorxiv.org/content/10.1101/2023.03.30.535006v1>
 16. DeLuca, M., **Pfeifer, W.G., **Huang, C.M., Poirier, M.G., **Castro, C.E.**, Arya, G. Thermally Reversible Pattern Formation in Arrays of Molecular Rotors. *Nanoscale*, 15:8356-8365 (2023) <https://doi.org/10.1039/D2NR05813H>, preprint on bioRxiv <https://www.biorxiv.org/content/10.1101/2022.10.19.512893v1>
 17. **Wang, Y., *Sensale, S., **Pedrozo, M., Poirier, M.G., *Arya, G., ***Castro, C.E.** Steric Communication between Dynamic Components on DNA nanodevices, *ACS Nano*, 17(9):8271-8280 (2023) <https://doi.org/10.1021/acsnano.2c12455>, preprint on bioRxiv <https://www.biorxiv.org/content/10.1101/2022.12.15.520588v1>
 18. **Beshay, P.E., **Kucinic, A., Wile, N., **Halley, P.D., **Des Rosiers, L., **Chowdhury, A., Hall, J.L., ***Castro, C.E.**, *Hudoba, M.W. Translating DNA origami Nanotechnology to Middle School, High School, and Undergraduate Laboratories. *The Biophysicist*, 4(2):68-81 (2023) <https://doi.org/10.35459/tbp.2022.000228>, preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2022.09.15.508130v1>
 19. *Wang, Y., *Kucinic, A., Des Rosiers, L., Wile, N., *Hudoba, M.W., ***Castro, C.E.** Mechanical Design of DNA Origami in the Classroom. *Applied Sciences*, 13(5): 3208 (2023)
 20. **Kucinic, A., **Huang, C.M., **Wang, J., Su, H.J., **Castro, C.E.** DNA origami tubes with reconfigurable cross-sections. *Nanoscale*, 2(15): 562-572 (2023)
 21. **Shahhosseini, M., **Beshay, P.E., Akbari, E., Avendano, A., Song, J.W. **Castro, C.E.** Multiplexed detection of cell-molecular interactions with DNA origami engineered cells in 3D collagen matrices. *ACS Applied Materials & Interfaces*, 14(50):55307–55319 (2022), preprint on bioRxiv (<https://www.biorxiv.org/content/10.1101/2022.02.04.479158v1>)
 22. Akbari, E., **Shahhosseini, M., Robbins, A., Poirier, M.G., Song, J.W., **Castro, C.E.** Low-Cost and Massively Parallel Force Spectroscopy with Fluid Loading on-a-chip (FLO-Chip). *Nature Communications*, 13:6800 (2022)
 23. Shy, B.R., Vykunta, V.S., Ha, A., Talbot, A., Roth, T.L., Nguyen, D.N., Pfeifer, W.G., Chen, Y.Y., Blaesche, F., Shifrut, E., Vedova, S., Mamedov, M.R., Chung, J.-Y., Li, H., Wolf, J., Martin, T.G., **Castro, C.E.**, Ye, L., Esensten, J.H., Eyquem, J., Marson, A.* Hybrid ssDNA repair templates enable high yield genome engineering in primary cells for disease modeling and cell therapy manufacturing. *Nature Biotechnology* (2022) (preprint on bioRxiv, <https://www.biorxiv.org/content/10.1101/2021.09.02.458799v1>)

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24. **Lucas, C.R., **Halley, P.D., **Chowdury, A., Lakshmanan, A., Harrington, B. K., Wasmuth, R., Beaver, L., Lapalombella, R., Johnson, A.J., Hertlein, E. K., Byrd, J.C. **Castro, C.E.**, DNA Origami Nanostructures Elicit Dose-Dependent Immunogenicity and are Non-toxic up to High Doses *in vivo*. *Small*, 18(26): 2108063 (2022)
 25. Kaufhold, W.T., **Pfeifer, W., **Castro, C.E.**, Di Michele, L. Probing the mechanical properties of DNA nanostructures with metadynamics. *ACS Nano*, 16(6): 8784-8797 (2022) (preprint on arXiv: <https://arxiv.org/abs/2110.01477>).
 26. Darcy, M., Crocker, K., **Wang, Y., **Le, J., **Mohommadiroozbahani, G., Abdelhamid, M., Craggs, T., **Castro, C.E.**, Bundschuh, R., Poirier, M. High Force Application by a Nanoscale DNA Force Spectrometer. *ACS Nano*, 16(4): 5682-5695 (2022)
 27. Lin-Shiao, E., **Pfeifer, W., Shy, B., Saffari Doost, M., Chen, E., Vykunta, V., Hamilton, J., Stahl, ., **Lopez, D., Sandoval Espinoza, C., Dejanov, A., Lew, R., Poirier, M., Marson, A., **Castro, C.E.**, Doudna, J.A. CRISPR-Cas9 mediated nuclear transport and genomic integration of nanostructured genes in human primary cells. *Nucleic Acids Research*, 50(3): 1256-1268 (2022) (preprint on bioRxiv: <https://www.biorxiv.org/content/10.1101/2021.11.08.467750v1>)
 28. Crocker, K., **Johnson, J.A., Pfeifer, W.G., **Castro, C.E.**, Bundschuh, R.A. A quantitative model for a nanoscale switch accurately predicts thermal actuation behavior. *Nanoscale*, 13: 13746-13757 (2021)
 29. **Wang, Y., **Le, J.V., Crocker, K., **Andrioff, N.R., Croy, C.M., Poirier, M.G., Bundschuh, R.A., **Castro, C.E.** A Nanoscale DNA Force Spectrometer Capable of Applying Tension and Compression on Biomolecules. *Nucleic Acids Research*, 49(15): 8987–8999 (2021)
 30. **Huang, C.M., **Kucinic, A., **Johnson, J.A., Su, H.-J.*, and **Castro, C.E.***, Integrated computer-aided engineering and design for DNA assemblies. *Nature Materials*, 20: 1264-1271 (2021)
 31. **Johnson, J.A., **Kolliopoulos, V., **Castro, C.E.** Co-self-assembly of multiple DNA origami nanostructures in a single pot. *Chemical Communications*, 57:4795-4798 (2021)
 32. Arroyo-Currás N., Sadeia, M., Ng, A.K., Fyodorova, Y., Williams, N., Afif, T., Huang, C.-M., Ogden, N., Andresen Eguiluz, R.C., Su, H.-J., **Castro, C.E.**, Plaxco, K.W., Lukeman, P.S. An electrochemical biosensor exploiting binding-induced changes in electron transfer of electrode-attached DNA origami to detect hundred nanometer-scale targets. *Nanoscale*, 12:13907-13911 (2020)
 33. Asghari Adib, A., Sheikhi, A., **Shahhosseini, M., Simeunovic, A., Wu, S., **Castro, C.E.**, Zhao, R., Khademhosseini, A., Hoelzle, D. Direct-write 3D printing and characterization of a GelMA-based biomaterial for intracorporeal tissue engineering. *Biofabrication*, 12(4): 045006 (2020)
 34. DeLuca, M., Shi, Z., **Castro, C.E.**, Arya, G. Dynamic DNA Nanotechnology: Toward Functional Nanoscale Devices. *Nanoscale Horizons*, 5, 182-201 (2020)
 35. **Johnson, J.A., Dehankar, A., Winter, J., **Castro, C.E.** Reciprocal Control of Hierarchical DNA Origami-Nanoparticle Assemblies. *Nano Letters*, 19(12): 8469-8475 (2019)
 36. Zhao, D., **Le, J.V., Darcy, M.A., Poirier, M.G., **Castro, C.E.**, Bundschuh, R. Quantitative Modeling of Concomitant Nucleosome Unwrapping. *Biophysical Journal*, 117(11): 2204-2216 (2019)
 37. Presley, K., **Shahhosseini, M., Shi, D., **Castro, C.E.**, Lannutti, J. Analysis of Long-term Optical Performance of Phosphorescent Oxygen Sensing Polymeric Nanofibers. *Polymer Testing*, 80: 106127 (2019)
 38. Dehankar, A., Porter, T., **Johnson, J.A., **Castro, C.E.**, Winter, J.O. Compact quantum dot surface modification to enable emergent behaviors in quantum dot-DNA composites. *The Journal of Chemical Physics*, 151:144706 (2019)

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39. **Johnson, J.A., Dehankar, A., Kabtilyal, P., Jergens, E., Robbins, S.A., Lee, K., Poirier, M.G., Johnston-Halperin, E., **Castro, C.E.***, Winter, J.O.* The path towards functional nanoparticle-DNA origami composites. *Materials Science and Engineering: R*, 138:153-209 (2019)
 40. **Halley, P.D., **Patton, R.A., **Chowdhury, A., Byrd, J.C., **Castro, C.E.** Low-cost, simple, and scalable self-assembly of DNA origami nanostructures. *Nano Research*, 12(5):1207-1215 (2019)
 41. *McWilliams, E.M., **Lucas, C.R., Chen, T., Harrington, B.K., Wasmuth, R., Campbell, A., Rogers, K.A., Cheney, C.M., Mo, X., Andritsos, L.A., Awan, F.T., Woyach, J., Carson III, W.E., Butchar, J., Tridandapani, S., Hertlein, E., **Castro, C.E.**, Muthusamy, N., and Byrd, J.C. Anti-BAFF-R antibody VAY-736 demonstrates promising preclinical activity in CLL and enhances effectiveness of ibrutinib. *Blood Advances*, 3:447-460 (2019)
 42. **Huang, C.M., **Kucinic, A., **Le, J.V., **Castro, C.E.***, Su, H-J*. Uncertainty Quantification of a DNA Origami Mechanism Using a Coarse-Grained Model and Kinematic Variance Analysis. *Nanoscale*, 11: 1647-1660 (2019)
 43. **Zhou, L., **Marras, A.E., **Castro, C.E.***, Su, H-J.* Paper Origami-Inspired Design and Actuation of DNA Nanorobots with Complex Motions. *Small*, 14(47): 1802580 (2018)
 44. **Marras, A.E., Shi, Z., **Lindell, M., **Patton, R., **Huang, C.M., Su, H-J., Arya, G., **Castro, C.E.** Cation-activated actuation for rapid reconfiguration of DNA nanodevices. *ACS Nano*, 12(9): 9484-9494 (2018)
 45. Ke, Y., **Castro, C.E.**, Choi, J.H. Structural DNA Nanotechnology: Artificial Nanostructures for Biomedical Research. *Annual Review of Biomedical Engineering*. Invited Review, 20:375–401 (2018)
 46. Lauback, S., Mattioli, K.R., **Marras, A.E., Armstrong, M., Rudibaugh, T., Sooryakumar, R., **Castro, C.E.** Real-time Magnetic Control of DNA Nanodevices. *Nature Communications*. 9, Article Number: 1446 (2018)
 47. Lei, D., **Marras, A.E., Liu, J., ****Huang, C-M., Zhou, L., **Castro, C.E.**, Su, H-J., Ren, G., 3D Structural Dynamics of DNA origami Mechanisms and Machines Using Individual Particle Electron Tomography. *Nature Communications*. 9, Article Number: 592 (2018)
 48. **Castro, C.E.**, Dietz, H., Högberg, B. DNA origami devices for molecular-scale precision measurements. *MRS Bulletin* 42(12): 925-929 (2017)
 49. Wang, P., Chatterjee, G., Yan, H., LaBean, T.H., Turberfield, A.J., **Castro, C.E.**, Seelig, G., and Ke, Y. Practical aspects of structural and dynamic DNA nanotechnology. *MRS Bulletin* 42(12): 889-896 (2017)
 50. *Akbari, E., **Mollica, M., **Lucas, C.R., Bushman, S., **Patton, R.A., Shahhosseini, M., Song, J.W., **Castro, C.E.** Engineering Cell Surface Function with DNA Origami. *Advanced Materials*. 29(46): 1703632 (2017)
 51. Shi, Z., **Castro, C.E.**, Arya, G., Conformational Dynamics of Mechanically Compliant DNA Nanostructures from Coarse-Grained Molecular Dynamics Simulations. *ACS Nano*. 11(5): 4617-4630 (2017)
 52. **Hudoba, M.W., *Luo, Y., **Zacharias, A., Poirier, M., **Castro, C.E.** A Dynamic DNA origami device for measuring compressive depletion forces. *ACS Nano*. 11(7):6566-6573 (2017)
 53. Liang, B., Nagarajan, A., **Hudoba, M.W., Alvarez, R., **Castro, C.E.**, Soghrati, S. Automated Quantification of the Impact of Defects on the Mechanical Behavior of DNA Nanoplates. *ASME Journal of Biomechanical Engineering*. 139(4): 041003 (2017)
 54. **Zhou, L., Su, H-J., **Marras, A.E., **Huang, C-M., **Castro, C.E.** Projection kinematic analysis of DNA origami mechanisms based on a two-dimensional image. *Mechanisms and Machine Theory*. 109:22-38 (2017)

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55. **Le, J., Luo, Y., Darcy, M.A., **Lucas, C.R., Goodwin, M., Poirier, M.G., **Castro, C.E.** Probing nucleosome stability with a DNA origami nanocaliper. *ACS Nano* 10(7): 7073 – 7084 (2016)
 56. **Marras, A.E., **Zhou, L., **Kolliopoulos, V., Su., H., **Castro, C.E.** Directing folding pathways for multi-component DNA origami nanostructures with complex topology. Invited article for special issue on “DNA Nanostructures and Self Assembly,” *New Journal of Physics*. 18: 055005 (2016)
 57. **Zhou, L., **Marras, A.E., **Castro, C.E.**, Su, H. Pseudo-rigid-body models of compliant dna origami mechanisms. *ASME Journal of Mechanisms and Robotics* 8(5), 051013 (2016)
 58. Kearney, C.J., **Lucas, C.R., O'Brien, F.J., **Castro, C.E.** DNA origami: Folded DNA nanodevices that can direct and interpret cell behavior. *Advanced Materials* 28(27): 5509-5524 (2016)
 59. **Halley, P., **Lucas, C.R., Webber, M.J., McWilliams, E.M., Kural, C., Lucas, D.M., Byrd, J.C., **Castro, C. E.** Daunorubicin-loaded DNA origami nanostructures circumvent drug resistance mechanisms in a leukemia model. *Small*. 12(3):308-320 (2016)
 60. **Castro, C.E.**, Su, H., **Marras, A.E., **Zhou, L., **Johnson, J. Mechanical Design of DNA nanostructures. *Nanoscale*. 7:5913-5921 (2015)
 61. **Zhou, L., **Marras, A.E., Su. H., **Castro, C.E.** Direct design of an energy landscape with bi-stable DNA origami structures. *Nano Letters*. 15(3): 1815-1821 (2015)
 62. **Marras, A.E., **Zhou, L., Su, H., **Castro, C.E.** Programmable motion of DNA origami mechanisms. *Proceedings of the National Academy of Sciences*. 112(3): 713-718 (2015)
 63. **Gupta, C., Liao, W.C., Gallego-Perez, D., **Castro, C.E.**, Lee, L. DNA Translocation through Nanochannels under Asymmetric Pulsed Electric Field. *Biomicrofluidics*. 8(2):024114 (2014)
 64. **Zhou, L., **Marras, A.E., Su. H., **Castro, C.E.** DNA origami compliant nanostructures with controllable geometry. *ACS Nano*. 8(1): 27-34 (2014)
 65. **Nguyen, V., Lilly, B., **Castro, C.E.** The exoskeletal structure and tensile loading behavior of an ant neck joint. *Journal of Biomechanics*, 47(2): 497-504 (2014)
 66. Wu, Y., Kwang, K., Agarwal, K., **Marras, A., Wang, C., Mao, Y., Huang, X., Ma, J., Yu, B., Lee, R., Vachani, A., Marcucci, G., Byrd, J., Muthusamy, N., Otterson, G., Huang, K., **Castro, C.E.**, Paulaitis, M., Nano-Sinkam, S., Lee, L.J. Detection of extracellular RNAs in cancer and viral infection via tethered cationic lipoplex nanoparticles containing molecular beacons. *Analytical Chemistry*. 85(32): 11265-11274 (2013)
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 69. Wang, L., **Castro, C.E.**, and Boyce, M.C. Growth strain-induced membrane morphology of white blood cells. *Soft Matter*. 7:11319-11324 (2011)
 70. **Castro, C.E.**, Dong, J., Lindquist, S., Boyce, M.C., Lang, M.J. Physical Properties of Polymorphic Yeast Prion Amyloid Fibers. *Biophysical Journal*. 101:439-448 (2011)
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 72. Tam, J., **Castro, C.E.**, Heatsh, R.J., Cardenas, M.J., Xavier, R., Lang, M.J., Vyas, J.M. Control and Manipulation of Pathogens with an Optical Trap for Live Cell Imaging of Intercellular Interactions. *PLoS ONE*. 5(12): e15215 (2010)

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73. Kim, S.T., Takeuchi, K., Zhen-Yu, J.S., Touma, M., **Castro, C.E.**, Fahmy, A., Vibhuti, D., Kappes, D., Lang, M.J., Wagner, G., Reinherz, E. The alpha beta T cell receptor is an anisotropic mechanosensor. *Journal of Biological Chemistry*. 284(45): 31028-31037 (2009)
 74. Villareal Marroquin, M.G., Sanchez Pena, M.L., **Castro, C.E.**, Castro, J.M., Cabrera Rios, M. Use of data envelopment analysis and clustering in multiple criteria optimization. *Intelligent Data Analysis* 12(1):89-101 (2008)
 75. Brau, R.R., Ferrer, J., Lee, H., **Castro, C.E.**, Tam, B., Tarsa, P.B., Matsudaira, P., Boyce, M.C., Kamm, R.D., Lang, M.J. Passive and active microrheology with optical tweezers. *Journal of Optics A: Pure and Applied Optics*, 9, S103-S112, (2007)
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TECHNOLOGY TRANSLATION

Patents

1. **Castro, C.E.**, Byrd, J.C., Halley, P.D., Lucas, C.R., Multi-Functional Cancer Drug Delivery Nanodevice for Precision Medicine (Pending, Application # PCT/US2019/026535)
2. Halley, P.D., **Castro, C.E.**, Lucas, C.R., Shahhosseini, M., Marras, A.E., DNA nanodevice hinge biosensors and methods of use thereof (Patent pending, Application # PCT/US2021/053204)
3. Akbari, E., Shahhosseini, M., **Castro, C.E.**, Song, J., Multiplexed Microfluidic Force Spectroscopy On-a-Chip (Patent pending, Application # PCT/US2022/013819)
4. Shahhosseini, M., Akbari, E., Beshay, P., **Castro, C.E.**, Song, J., Multiplexed detection of cell-molecular interactions with DNA origami engineered cells in 3-D collagen matrices. (Patent pending, application # PCT/US2023/061817)
5. Roki, N., Byrd, J., **Castro, C.E.**, Long, M., Lucas, C.R., A Controllable Nanoplatfrom for Vaccine Payload Delivery. (Patend pending # PCT/US2023/072801)

Entrepreneurship

1. Co-founder, DNA Nanobots, Inc., Company started October 2022, <https://dnananobots.com/>

SELECTED TALKS AND SEMINARS

1. C.E. Castro "Nanomechanical DNA devices to program collective dynamics and interrogate biomolecules," Duke University Mechanical Engineering and Materials Science Department Seminar Series, September 2025 (invited seminar)
2. C.E. Castro "Intra- and extra- cellular delivery of DNA origami nanostructures," ACS Fall Meeting, August 2025, Washington DC (Invited talk)
3. C.E. Castro "Mechanical design of DNA based devices and assemblies," 2024 Monie A. Ferst Award Symposium, Sigma Xi Society, Oct 18, 2024 (invited talk)
4. C.E. Castro "Delivering DNA Nanodevices into Live Cell Nuclei." OSU Molecular Biophysics Training Program Symposium, May 13, 2024, (student panel selected faculty seminar)
5. C.E. Castro "DNA based molecular devices to probe and target mechanisms of disease," OSU Comprehensive Cancer Center Grand Rounds, April 26, 2024 (invited seminar)

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6. C.E. Castro "DNA based molecular devices to probe and target mechanisms of disease," OSU Leukemia and Hematologic Malignancies Research Program Meeting, March 21, 2024 (invited seminar)
 7. C.E. Castro "Interfacing DNA Nanodevices with Biomolecules *In Vitro* and *In Situ*", Air Force Research Laboratory, 711 Human Performance Wing, Dayton, OH, January 2024 (invited seminar)
 8. C.E. Castro "Interfacing DNA Nanodevices with Biomolecules *In Vitro* and *In Situ*," Rutgers University Newark, Department of Chemistry, November 17, 2023 (invited seminar)
 9. C.E. Castro "Designing Mechanical Functions from Cooperative Dynamics of DNA Devices," Massachusetts Institute of Technology, Department of Mechanical Engineering, Soft Materials, Structures, and Devices Seminar, October 26, 2023 (invited seminar)
 10. C.E. Castro "Designing DNA Nanodevices to Interface with Biomolecules", Department of Chemistry Seminar, Case Western Reserve University, October 12, 2023 (invited seminar)
 11. C.E. Castro "Engineering DNA nanodevices to Interface with Biomolecules", Invited talk at Foundations of Nanoscience (FNANO) conference, April 2023, Invited Talk in DNA nanostructures track
 12. C.E. Castro "Engineering DNA Nanodevices for Molecular and Cellular Applications." Miami University Chemistry & Biochemistry Seminar Series, Oct. 6, 2022 (invited seminar)
 13. C.E. Castro "Engineering DNA Nanodevices for Molecular and Cellular Applications." Institute of Genetics and Molecular and Cellular Biology (IGBMC), Strasbourg, France, July 11, 2022 (invited seminar)
 14. C.E. Castro "DNA-based nanorobotic devices and materials." Kent State University, Advanced Materials and Liquid Crystal Institute Materials Day, April 21 2022 (invited talk)
 15. C.E. Castro "DNA nanomechanical devices for probing molecular and cellular systems." Yonsei University, School of Mechanical Engineering Graduate Seminar Series (Invited Virtual Talk), Nov 2020
 16. C.E. Castro "Hybrid top-down and bottom-up approach for engineering DNA assemblies." Invited talk at Foundations of Nanoscience (FNANO) conference, April 2020, Keynote Presentation in Computational Tools track (Note on-site conference was canceled, talk delivered virtually)
 17. C.E. Castro, "DNA-based nanorobotics and nanomechanical devices." Notre Dame University, Mechanical Engineering Department Seminar (Invited Talk), January 2020
 18. C.E. Castro, "DNA-based nanorobotics and nanomechanical devices." Columbia University, Mechanical Engineering Department Seminar (Invited Talk), Nov. 2019
 19. C.E. Castro, "A Multifunctional DNA-origami platform for Biomolecular Detection in Cellular Microenvironments." Biofabrication Conference 2019, Columbus, OH (keynote presentation for *Design, Simulation, and Monitoring* Track), Oct. 2019
 20. C.E. Castro, "Design Automation for DNA Origami Mechanisms." oxDNA users and developers workshop, Oxford University, Oxford, UK. (Invited Talk, remote participant), Sept. 2019
 21. C.E. Castro, "DNA nanomechanical devices for probing molecular and cellular systems." Technische Universität München, 10 years of biomolecular nanotechnology research at TUM workshop (Invited Talk), June 2019
 22. C.E. Castro, "DNA nanomechanical devices for probing molecular and cellular systems." Huazhong University of Science and Technology, School of Automation (Invited Talk), May 2019

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23. C.E. Castro, "DNA nanomechanical devices for probing molecular and cellular systems." Institute for Quantitative Health Science & Engineering and Biomedical Engineering Seminar (invited talk), Dec. 2018
 24. C.E. Castro, "Biophysical and Biomedical Applications of DNA nanodevices." Royal College of Surgeons Ireland (invited talk), August 2018
 25. C.E. Castro, "Design, control, and applications of DNA nanomechanical devices." Cambridge University, Physics Department, June 2018
 26. C.E. Castro, "Design, control, and applications of DNA nanomechanical devices." AMBER Centre, Trinity College Dublin, (invited talk), June 2018
 27. C.E. Castro, "Design, control, and applications of DNA nanomechanical devices." Kent State University, Physics seminar series. Kent, OH (invited talk), February 2018
 28. C.E. Castro, "Design and control of DNA origami nanomachines." International Conference on Natural and Artificial Molecular Machines. Indian Institute of Technology Bombay, Mumbai, India (Invited Talk), December 2017
 29. C.E. Castro, "Programming mechanical function via DNA self-assembly." Materials Research Society Annual Fall Meeting (Invited Talk), November 2017
 30. C.E. Castro, "Design, control, and applications of DNA nanomechanical devices." Boston University, Biophysics seminar series. Boston, MA (invited talk), November 2017
 31. C.E. Castro "Self-assembly of DNA nanomechanical devices for biophysical measurements." University of Pennsylvania, Department of Biochemistry and Molecular Biophysics seminar. Philadelphia, PA (invited talk). October 2017
 32. C.E. Castro "Engaging undergraduate (and younger) students in DNA nanotechnology." DNA23 (invited talk). September 2017
 33. C.E. Castro "Design and Control of DNA nanomechanical devices." Arizona State University, School of Molecular Sciences seminar. Tempe, AZ (invited talk). September 2017
 34. C.E. Castro "Self-assembly of DNA nanomechanical devices." The Ohio State University, Biomedical Engineering Department seminar. Columbus, OH (invited talk). August 2017
 35. C.E. Castro "Instrumenting the Cancer micro-environment with DNA nanomachines." National Institutes of Health Workshop on Emerging Technologies and Inter-disciplinary Team Formation. Bethesda, MD (invited talk). August 2017
 36. C.E. Castro "Self assembly of DNA nanomechanical devices." University of Maryland, Microsystems seminar. College Park, MD (invited talk). May 2017
 37. C.E. Castro "DNA origami assemblies with cooperative and communicating conformational changes" Foundations of Nanoscience. Snowbird, UT (contributed talk). 2017
 38. C.E. Castro "Self assembly of DNA nanomechanical devices." Harvard University, Applied Mechanics seminar. Cambridge, MA (invited talk) March 2017
 39. C.E. Castro "Self assembly of DNA nanomechanical devices." University of Wisconsin – Milwaukee, Physics Department seminar. Milwaukee, WI (invited talk) December 2016
 40. C.E. Castro "Self assembly of DNA nanomechanical devices." Oberlin College, Physics & Astronomy Department Seminar Series. Oberlin, OH (invited talk) November 2016
 41. C.E. Castro "DNA nanomechanical devices for molecular and cellular applications." Kavli Frontiers of Science Symposium. Irvine, CA (invited talk). November 2016
 42. C.E. Castro "Mechanical Design of DNA origami nanodevices." Princeton University, Mechanical Engineering Department seminar. Princeton, New Jersey (invited talk). Sept 2016

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43. C.E. Castro "Engineering approaches to DNA-based design and assembly." Spiez CONVERGENCE conference. Spiez, Switzerland. (invited talk) Sept 2016
 44. C.E. Castro "Mechanical design of DNA nanostructures and devices." Air Force Research Lab Soft Matter Seminar (Invited Talk), Dayton, OH, June 2016
 45. C.E. Castro "Engineering DNA origami Motion and Structural Dynamics," 10 years of DNA origami Symposium (invited talk), Pasadena, CA, California Institute of Technology, Mar 2016
 46. C.E. Castro "Entropically controlled nanomechanical sensing with DNA origami." ASME Global Conference on Nanoengineering for Medicine and Biology, Houston, TX (contributed talk) Feb 2016
 47. C.E. Castro. "Self-assembly of DNA nanomechanical devices." University of Illinois Urbana-Champaign (Manufacturing interest group invited talk), Urbana-Champaign, IL, Feb 2016
 48. C.E. Castro. "Programming dynamics of DNA origami." Molecular Programming Project Annual Workshop (invited talk). Seattle, Washington, Jan 2016
 49. C.E. Castro. "DNA based nanomechanical devices." University of Texas Austin (NASCENT center invited talk), Austin, TX, Nov 2015
 50. C.E. Castro. "Mechanical Design of DNA nanostructures for physical measurements" Annual Society of Engineering Science Conference, Symposium in honor of Prof. Mary Boyce (invited talk), College Station, TX, Oct 2015
 51. C.E. Castro. "Mechanical Design of DNA-based probes and sensors." Wyss Institute for Biologically Inspired Engineering, Harvard University. Boston, MA. October 2015
 52. C.E. Castro. "Mechanical Design of DNA nanostructures and Measurement Devices." Massachusetts Institute of Technology, Mechanical Engineering Department colloquium (invited talk), Boston, MA, May 2015
 53. C.E. Castro. "Mechanical Design of DNA nanostructures and Measurement Devices." University of California San Diego, Nanoengineering Department seminar series (invited talk), San Diego, CA, April 2015
 54. C.E. Castro. "DNA origami Tools for the Study of Chromatin Structure and Dynamics." ASME Global Conference on Nanoengineering for Medicine and Biology, Minneapolis, MN, April 20, 2015
 55. C.E. Castro. "Designing Mechanical Dynamics of DNA origami Nanostructures." American Chemical Society Midwest Regional Meeting (Invited Talk), Pittsburgh, PA. Oct. 29-30, 2014
 56. C.E. Castro. "Mechanically Functional DNA origami Nanostructures." World Congress of Biomechanics (Invited Talk). Boston, MA. July 6-11, 2014
 57. C.E. Castro. "Engaging Undergraduates in Designing and Building Biomolecular Systems." Physics Research & Education Gordon Conference (Invited Talk), Mt. Holyoke, MA, June 12 2014
 58. C.E. Castro. "Modifying DNA Origami Structure and Function with Single-Stranded DNA." Foundations of Nanoscience (Invited Talk), Snowbird, UT April 2014
 59. C.E. Castro. "DNA-based mechanical devices to probe molecular and cellular interactions." Vanderbilt University. Mechanical Engineering Department Seminar (Invited Talk) Nashville, TN Mar 10, 2014.
 60. C.E. Castro. "Design of Mechanically Functional DNA Origami Nanostructures." Seoul National University, Brain Korea 21 plus program (Invited Talk). Seoul, Korea, Feb 20-21, 2014
 61. C.E. Castro. "Controllable DNA nanostructures for delivering and detecting cellular signals." Johns Hopkins University Biomedical Engineering Department Seminar (Invited Talk) Baltimore, MD, Dec 2, 2013

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62. C.E. Castro. "Dynamic Biomolecular Interactions in DNA Origami Design." *Air Force Research Laboratory, Wright Patterson Air Force Base* (Invited Talk) Dayton, OH, Aug 7, 2012.
63. C.E. Castro. "Programming Biological Self-Assembly for the Design of Nanoscale Engineering Tools and Materials." *The Ohio State University Biophysics Graduate Program Seminar* (Invited Talk) Columbus, OH, Oct 19, 2011

SYNERGISTIC/SERVICE ACTIVITIES

- Co-organizer, Symposium on Nanoscale Tools to Understand the Physical Biology of a Cell, Division of Physical Chemistry, ACS Fall 2025 Meeting, Washington DC August 17-21 2025
- Track Chair, Molecular Machinery Track, Foundations in Nanoscience Annual Meeting, 2024-present
- Assoc. Editor ASME Journal of Medical Devices, 2024-present
- Standing Study Section Member, NIH Innovations in Nanosystems and Nanoscience Study Section, 2021-present
- Collaborative development of after school STEM and Art club at Metro early college preparatory middle school and Hilltonia Middle School, 2016-2018
- Member American Society of Mechanical Engineers; American Society of Engineering Education; International Society for Nanoscale Science, Computation, and Engineering; Biophysical Society
- Member, Biotransport sub-group, ASME Bioengineering Division, reviewer for Summer Bioengineering, Biotransport, Biomechanics (SB3C) conference abstracts
- Faculty mentor for OSU undergraduate Eminence Scholars program
- Faculty mentor for Lambda Psi Minority Engineering Honorary
- Yearly mentor for over 10 students for Translating Engineering Research to K-8 Program (TEK-8) summer REU program.
- Advisor for OhioMOD – Ohio State University Biomolecular Design Project Team
- Biomolecular design workshop for STEM leadership camp at Ohio State University
- Designed new graduate course in Mechanics of Biomolecular Systems (Ohio State University) including laboratory component focused on DNA self-assembly
- Regular guest Speaker for Engineering Pre-freshman and Cooperative Education program (Ohio State University)
- Peer reviewer for Nature, Journal of Computational Chemistry, Nature Chemistry, Journal of Experimental Biology, Nanoscale, Nano Letters, ACS Nano, Nature Communications, Science Advances, Bio-Systems, Small, Robotics and Automation, ACS Omega, Nucleic Acids Research, Advanced Materials, ACS Applied Optical Materials
- Member General Education Revision committee (University committee), only representative from College of Engineering
- National Science Foundation, Office of Naval Research, Army Research Office panel reviewer for multiple programs (typically 1-2 review panels yearly)
- Ad hoc reviewer for MacArthur Fellows, NSF, European Research Council
- Session organizer and co-chair at 2014 World Congress of Biomechanics
- Session organizer and co-chair for OSU IMR Materials Week Symposium 2013, 2014, 2016, 2019, 2023
- Participant in MRS/Kavli Future of Materials Workshop on Nucleic Acid Nanotechnology

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- Symposium Organizer APS (DSOFT) March 2020 Meeting on “Remote Control of Molecular Devices”

RESEARCH SUPPORT (completed and current)

Funding amounts indicate total for each award.

- External funding total = \$18,822,577
- External funding total as PI = \$9,524,452
- Castro Lab share of external grants = ~\$6,500,000
- Internal funding total = \$1,135,238
- Castro Lab share of internal grants = ~\$805,238

Completed:

External

1. PI: NSF BRIGE grant No. 1228104, Title: BRIGE: Fluorescence Based Single Molecule Force Spectroscopy with DNA Nanotechnology, 2012-2014, \$175,000
2. PI: NSF grant No. 1235060, Title: Design of DNA origami machines and mechanisms, 2012-2016, \$410,000
3. PI: NSF CAREER grant No. 1351159, Title: CAREER: A Molecular Force Sensor for Single Molecule Studies of Cellular Force Application, 2014-2019, \$435,613
4. PI: NIH grant No. R21CA174583-01, Title: Nanoscale tools for functional studies of cancer-relevant chromatin modifications, 2013-2016, \$614,692
5. Co-PI: NIH grant No. R21CA179403, Title: Plasma RNA based early lung cancer detection by tethered cationic lipoplex assay, 2013-2016, \$334,044
6. Co-PI: NIH grant No. R21CA185707, Title: Tethered cationic lipoplex nanoparticle assay for liver cancer detection, 2014-2016, \$352,594
7. Co-PI: NSF grant No. 1516976, Title: Chromatin Structural Dynamics Studied with DNA Origami Nanotechnology, 2015-2017, \$350,000
8. Co-PI: NIH grant No. 1R01CA197870, Title: Improving BTK directed therapy for CLL, 2015-2020, \$1,750,806
9. Co-PI: NSF grant No. 1536862, Title: Robust design of compliant dna origami mechanisms, 2015-2018, \$419,522
10. Co-PI: NSF grant No. 1715321, Title: Mechanistic studies of heterochromatin mesoscale structural dynamics with DNA origami nanotechnology, 2017-2020, \$647,328
11. PI: American Heart Association grant No. 17IRG33460357, Title: A molecular biophysical approach for studying transvascular function in vitro, 2017-2019, \$150,000
12. Co-PI: Department of Energy grant No. DE-SC0017270, Title: Exploring fundamental properties of dynamic DNA origami-nanoparticle composites, 2017-2020, \$1,170,000
13. Co-PI: Department of Energy grant No. DE-SC0017270 Renewal, Title: Reciprocal Energy Exchange in Hierarchical DNA Origami-Nanoparticle Composites, 2020-2023, \$1,350,000
14. Multi-PI (one of three PIs): NIH grant No. 1R01HL141941-01, Title: Biophysical-based approach for controlling blood vessel structure and function, 2018-2022 (currently in NCE), \$1,689,148
15. Co-PI (PI: R. Sooryakumar): National Science Foundation grant No. 1916740, Title: Real time magnetic control of DNA origami devices and metamaterials, 2019-2022 (Currently in NCE), \$450,000

16. co-PI (PI: Ben Walter): NIH grant No. R21AR076611, Title: Osmotic Properties of Healthy and Degenerated Cell Pericellular Matrix, 2020-2021, \$408,009
17. PI: National Science Foundation grant No. 2044601, PFI-TT: DNA Sensors for Rapid Detection of COVID-19 and other Viral Diseases with High Sensitivity, June 2021 – Nov 2022, \$249,999
18. PI: National Science Foundation grant No. 1921881, Title: DMREF: Collaborative research: DNA-based sensing, communicating, and phase-separating materials, 2019-2023 (currently in NCE), \$1,700,000 (PI for OSU portion, which is \$1,268,729, rest is to Duke University with Gaurav Arya as PI)
19. PI: National Science Foundation grant No. 1933344, Title: EFRI CEE: DNA origami tools to engineer chromatin structure and function in live cells, 2019-2023, \$2,000,000
20. PI: Herbert W Hoover Foundation grant, Title: Molecular sensing of nanoplastic tissue accumulation using a novel DNA-microfluidic system, 2023-2024, \$100,000

Internal

21. PI: Ohio State University Cancer Center, Career Development Award from OSU Leukemia SPORE, Title: Characterization of Co-stimulatory Signaling Effects on Survival and Proliferation of B cell Malignancies, 2012-2014, \$176,000
22. PI: OSU Center for Emergent Materials (NSF MRSEC) Exploratory Research Seed Grant, Title: DNA-based molecular actuators for novel smart material systems, 2012-2013, \$40,000
23. Inter-disciplinary Research Group co-lead: OSU Center for Emergent Materials (NSF MRSEC) proto-IRG Seed Grant, Title: protoIRG: Functional Dynamics of DNA based nanostructures, 2012-2014, \$200,000
24. PI: OSU Center for Emergent Materials (NSF MRSEC) Multi-Disciplinary Team Building Seed Grant, Title: DNA devices for probing nanoscale fluid mechanics, 2015-2016, \$60,000
25. PI: OSU Drug Development Institute, Title: DNA origami nanodevices for controlled T cell activation, Jan – Dec 2019, \$105,400
26. PI: OSU Corporate Engagement Office, Title: Rapid COVID-19 Diagnostic Testing using DNA origami Nanostructures, March 2021 – January 2022, \$96,509
27. PI: Ohio State Office of Research COVID-19 Seed Grants, Title: Rapid COVID-19 Diagnostic Testing with DNA origami nanostructures, May 2020 – June 2021, \$37,329
28. co-PI (PI is Dr. Chrus Lucas, Research Scientist in Castro Lab): OSU Center for Cancer Engineering Seed Grant: Targeted Drug Delivery to AML with DNA origami Nanostructures, July 2022 – December 2023, \$150,000
29. PI: Institute for Materials Research Seed Grant, Multi-disciplinary Team Building Grant, Title: Signal Transducing Nanodevice Assemblies for Triggered Materials Self-assembly, \$70,000

Current:

External

1. PI: National Science Foundation grant No. 2323968, Title: DMREF/Collaborative Research: Architecting DNA Nanodevices into Metamaterials, Transducing Materials, and Assembling Materials, 2023-202, \$2,000,000 (PI for OSU portion, which is \$1,450,000, rest is to Duke University with Gaurav Arya as PI)
2. Co-PI (PI: Michael Poirier): National Science Foundation grant No. 2411725, Title: NSF-ANR MCB/PHY: DNA Origami-based machines for epigenetic manipulation of gene transcription, 2024-2027, \$700,000 (50% allocated for Castro Lab)
3. Co-PI (PI: Petr Sulc, Arizona State University): National Science Foundation grant No. 2346048, Title: POSE: Phase II: Open-source ecosystem for nucleic acid nanotechnology modeling, 2024-2027, \$1,365,822 (sub-contract to OSU is \$253,720 all for Castro Lab)

Internal

1. Co-Lead: OSU Center for Emergent Materials, proto-IRG, Title: Transducing dynamics across scales in bio-hybrid materials, \$200,000

Past and Current Doctoral and Post-doctoral Trainees

Previous post-doctoral Trainees:

1. Dr. Chris Lucas, currently Research Scientist at Ohio State University between Comprehensive Cancer Center and Department of Mechanical and Aerospace Engineering
2. Niksa Roki, PhD from University of Maryland, starting in July 2020, Recently received and accepted Pelotonia post-doctoral fellowship (co-mentored with Meixiao Long and John Byrd from OSU CCC), Currently post-doctoral research at University of Miami
3. Golbard Mohammadiroozbahani, PhD from Illinois Institute of Technology, started February 2020, supported by NSF funding (co-mentored with Michael Poirier from Department of Physics), Currently staff scientist at Pfizer.
4. Melika Shahhosseini, PhD in Mechanical Engineering from OSU in Dec. 2022, Started January 2020, supported by NIH and DoE funding, completed post-doctoral research in May 2024, accepted job offer from Intel Corp
5. Peter Beshay, PhD in Mechanical Engineering from OSU in Dec. 2023, Started January 2024, supported by HW Hoover Foundation Funding, started job as Staff Scientist at Intel Corp. August 2024
6. Wolfgang Pfeifer, PhD from University of Duisberg-Essen in Germany, started January 2020, supported by NSF funding (co-mentored with Michael Poirier from Department of Physics), Currently Research Scientist at University of Chicago Department of Chemistry

Current post-doctoral trainees:

1. Teng Teng, PhD from Ohio State University in Summer 2023, supported by NSF funding, leading new design tool and computational efforts.

Graduated PhD Trainees:

1. Cherry Gupta, PhD in Mechanical Engineering 2014, co-advised with Dr. L. James Lee. Currently Research Engineer at Battelle Memorial Institute, Columbus, Ohio
2. Michael Hudoba, PhD in Mechanical Engineering 2016, Currently Professor at Otterbein University, won Best Young Teacher at Otterbein University
3. Alexander Marras, PhD in Mechanical Engineering 2017, Currently post-doctoral researcher at University of Chicago (Institute of Molecular Engineering) in Laboratory of Dr. Matthew Tirrell. Currently on academic job market.
4. Lifeng Zhou, PhD in Mechanical Engineering 2017, co-advised with Dr. Hai-Jun Su. Currently post-doctoral researcher at Albany University (RNA Institute) in Laboratory of Dr. Ken Halvorsen. Recently submitted NIH K99 award application.
5. Randy Patton, PhD in Mechanical Engineering 2017, Currently Staff Engineer at Intel Corp., Portland, Oregon.

6. Jenny Le, PhD in Biophysics, 2018, after PhD became post-doctoral researcher at UCLA Department of Mechanical Engineering in laboratory of Dr. Elisa Franco
7. Joshua Johnson, PhD in Biophysics in 2019, after PhD became post-doctoral researcher at Imperial College London in laboratory of Lorenzo Di Michele
8. Chao Min Huang, PhD in Mechanical Engineering 2020, co-advised with Dr. Hai-Jun Su. After PhD post-doctoral researcher at Duke University in the Laboratory of Dr. Gaurav Arya.
9. Melika Shahhosseini, PhD in Mechanical Engineering December 2022, currently postdoctoral researcher in my laboratory, co-founder of DNA Nanobots, Inc., Company started October 2022
10. Yuchen Wang, PhD in Mechanical Engineering May 2023, currently postdoctoral researcher at Harvard University, Wyss Institute for Biologically Inspired Engineering
11. Teng Teng, PhD in Mechanical Engineering Aug 2023, continuing as post-doctoral researcher in my laboratory
12. Anjelica Kucinic, PhD in Chemical & Biomolecular Engineering Aug 2023, accepted post-doctoral researcher position at Centre de Biochimie Structurale, Montpellier, France starting November 2023
13. Peter Beshay, PhD in Mechanical Engineering Dec 2023, currently post-doctoral researcher in my laboratory and recently accepted offer at Intel Corp., Portland, Oregon
14. Diana Lopez, PhD in Biophysics Aug 2024, co-advised with Prof. Marcos Sotomayor (Department of Chemistry & Biochemistry), accepted post-doctoral researcher position at University of Chicago.

Graduated M.S. students:

1. Vienny Nguyen, 2013, went to NASA as robotics engineer
2. Daniel Turowski, 2013, went to Microsoft as hardware design engineer
3. Emily Briggs, 2014, engineer at technology start-up
4. Carl Miller, 2015, went to Mubea as design engineer
5. Molly Mollica, 2016, currently in PhD program in Bioengineering at University of Washington
6. Patrick Halley, 2016, currently staff research engineer in Castro Lab at OSU
7. Andres Serrano Paladines, 2020, Mechanical Engineering
8. Miguel Pedrozo, 2021, Mechanical Engineering, Battelle Memorial Institute
9. Kehao Huang, 2022, Mechanical Engineering, Currently ME PhD student
10. Marissa Kruse, 2024, Electrical and Computer Engineering, Currently research staff at Air Force Research Laboratory, Pursuing PhD at Texas A&M starting Fall 2025.

Current PhD Trainees:

1. Yin Wei, Biophysics Graduate Program, expected graduation 2025, post-candidacy
2. Kehao Huang, Mechanical Engineering, expected graduation 2026, pre-candidacy
3. Vineesha Senthil, Mechanical engineering, expected graduation 2028, pre-candidacy

Current M.S. students:

1. Jeniffa Rajavedhanayagam, Mechanical Engineering, expected graduation 2027, pre-candidacy

Undergraduate students advised:

- Over 50 UG researchers advised including 11 UG theses
- 5 UG students have been co-authors on manuscripts
- UG research advisees currently pursuing PhD programs at Georgia Tech, UC Berkeley, UIUC, Washington University, University of Texas Austin, Duke University, North Carolina State University, Wake Forest University, Case Western University, University of Michigan, and Ohio State University.

Teaching Experience

Student evaluation scores out of 5.0-point scale

- Strength of Materials, 2nd year core course in Mechanical Engineering
 - Winter 2012 (quarter system), 84 students, Overall student evaluation score = 4.4 (University average for similar courses = 4.1)
 - Autumn 2012 (semester system, all subsequent on semesters), 77 students, Overall student evaluation score = 4.5 (University average for similar courses = 4.1)
 - Autumn 2014 (taught two sections), 81 students, Overall student evaluation score = 4.5 (University average for similar courses = 4.1)
 - Autumn 2014 (taught two sections), 115 students, Overall student evaluation score = 4.6 (University average for similar courses = 4.1)
- Statics and Strength of Materials, 2nd year course for non-ME Engineering majors
 - Spring 2013, 126 students, Overall student evaluation score = 4.6 (University average for similar courses = 4.1)
 - Spring 2014, 133 students, Overall student evaluation score = 4.5 (University average for similar courses = 4.1)
- Design and Analysis of Machine Elements II, 3rd year core course in Mechanical Engineering
 - Autumn 2015, 95 students, Overall student evaluation score = 3.4 (University average for similar courses = 4.1)
 - Autumn 2016, 81 students, Overall student evaluation score = 4.6 (University average for similar courses = 4.2)
 - Autumn 2017, 79 students, Overall student evaluation score = 4.6 (University average for similar courses = 4.2)
- Kinematics and Mechanism Design, 3rd year core course in Mechanical Engineering
 - Autumn 2018, 62 students, Overall student evaluation score = 3.2 (University average for similar courses = 4.2)
 - Autumn 2018, 77 students. (taught two sections), Overall student evaluation score = 4.0 (University average for similar courses = 4.2)
 - Autumn 2019, 57 students, Overall student evaluation score = 4.25 (University average for similar courses = 4.37)
 - Autumn 2019, 80 students, Overall student evaluation score = 4.26 (University average for similar courses = 4.27)
- ME/AE 4999/4999H, senior students pursuing a thesis in Mechanical or Aerospace Engineering
 - Autumn 2019, 15 students, Overall student evaluation score = 4.29 (University average for similar courses = 4.36)
- Mechanics of Biomolecular Systems, Course was developed by Prof. Castro and is taken by graduate students and senior undergraduate students
 - Spring 2013, 10 students, Overall student evaluation score = 5.0 (University average for similar courses = 4.5)
 - Spring 2014, 24 students, Overall student evaluation score = 5.0 (University average for similar courses = 4.3)
 - Spring 2015, 11 students, Overall student evaluation score = 4.4 (University average for similar courses = 4.5)
 - Spring 2016, 19 students, Overall student evaluation score = 4.5 (University average for similar courses = 4.5)
 - Spring 2017, 25 students, Overall student evaluation score = 4.8 (University average for similar courses = 4.4)
 - Spring 2018, 22 students, Overall student evaluation score = 4.5 (University average for similar courses = 4.4)

- Spring 2019, 16 students, Overall student evaluation score = 4.8 (University average for similar courses = 4.3)