



Exponent[®]
Engineering & Scientific Consulting

Jonathan Weiss, Ph.D.

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Professional Profile

Dr. Weiss is a mechanical engineer specializing in custom mechanical testing, solid mechanics, soft materials, and biomanufacturing. He is experienced in mechatronics and additive manufacturing, with particular focus on fused filament fabrication, stereolithography, and 3D printing of single cells and organoids. Through his work, he has led multidisciplinary projects at the intersection of engineering and the life sciences, driving solutions that bridge fundamental research and real-world applications.

Before joining Exponent, Dr. Weiss received his Ph.D. in bioengineering at Stanford University, where he developed an open-source, multi-material 3D bioprinter platform, including novel multi-nozzle printheads that significantly improve throughput of tissue fabrication. Using these technologies, he engineered stem cell-derived heart tissues, investigated differentiation and maturation strategies for therapeutic applications, fabricated acellular trileaflet heart valves with photocurable hydrogels, and characterized auxetic lattices constructed from soft silicone materials.

Dr. Weiss' prior work includes research in microfluidics, where he designed single-cell capture devices for studying the molecular mechanisms of cardiomyopathies while completing his B.S. in biomedical engineering at Yale University.

Academic Credentials & Professional Honors

M.S., Bioengineering, Stanford University, 2022

B.S., Biomedical Engineering, Yale University, 2020

National Science Foundation Graduate Research Fellowship, 2021

Stanford University Bio-X Graduate Student Fellowship, 2021

Yale University D. Allan Bromley Prize in Biomedical Engineering, 2020

Yale University Henry Edwards Ellsworth Prize in Science, 2020

Tau Beta Pi Stabile Scholarship, 2019

Publications

JD Weiss*, A Mermin-Bunnell*, FS Solberg, T Tam, L Rosalia, A Sharir, D Rutsche, S Sinha, PS Choi, M Shibata, Y Palagani, R Nilkant, K Paulvannan, M Ma, MA Skylar-Scott. A low-cost, open-source 3D printer for multimaterial and high-throughput direct ink writing of soft and living materials. *Adv. Mater.*

2025, 2414971. <https://doi.org/10.1002/adma.202414971>

DLL Ho, S Lee, J Du, JD Weiss, T Tam, S Sinha, D Klinger, S Devine, A Hamfeldt, H Leng, JE Herrmann, M He, LG Fradkin, TK Tan, D Standish, P Tomasello, D Traul, N Dianat, R Ladi, Q Vicard, K Katikireddy, MA Skylar-Scott. Large-Scale Production of Wholly-Cellular Bioinks via the Optimization of hiPSC Aggregate Culture in Automated Bioreactors. *Adv. Healthcare Mater.* 2022, 11, 2201138. <https://doi.org/10.1002/adhm.202201138>

KJ Wolf*, JD Weiss*, SGM Uzel, MA Skylar-Scott, JA Lewis. Biomanufacturing human tissues via organ building blocks. *Cell Stem Cell.* 2022. Volume 29, Issue 5, 667 – 677. <https://doi.org/10.1016/j.stem.2022.04.012>

JA Clark, JD Weiss, and SG Campbell. A Microwell Cell Capture Device Reveals Variable Response to Dobutamine in Isolated Cardiomyocytes. *Biophysical Journal* 2019, Volume 117, Issue 7, 1258 – 1268. <https://doi.org/10.1016/j.bpj.2019.08.024>

Presentations

JD Weiss, T Tam, MA Skylar-Scott. Build-Your-Own 3D Bioprinter. Workshop presentation. Chan Zuckerberg Biohub, San Francisco, CA, 2025.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost, Open-Source 3D Printer for Multimodal and High-Throughput Direct Ink Writing. Poster. Stanford Medicine Heart Center Research Day, Stanford University, 2025.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost, Open-Source 3D Printer for Multimodal and High-Throughput Direct Ink Writing. Poster. Advanced Research Projects Agency for Health (ARPA-H) One-Year Progress Meeting, Stanford University, 2024.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost, Open-Source 3D Printer for Multimodal and High-Throughput Direct Ink Writing. Poster. Stanford Bioengineering Retreat, Asilomar Conference Grounds, Pacific Grove, CA, 2024.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost, Open-Source 3D Printer for Multimodal and High-Throughput Direct Ink Writing. Poster. Stanford-Cornell Cardiovascular Symposium, Stanford University, 2024.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost and Open-Source Bio-Multimaterial Multinozzle 3D Printer. Oral Presentation. World Biomaterials Conference, Daegu, Korea, 2024.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost and Open-Source Bio-Multimaterial Multinozzle 3D Printer. Poster. Additional Ventures Cures Collaborative Conference, Atlanta, GA, 2024.

JD Weiss*, A Mermin-Bunnell*, et al. A Low-Cost, Open-Source 3D Printer for Multimodal and High-Throughput Direct Ink Writing. Poster. Bio-X Fellows Symposium, Stanford University, 2023.

JD Weiss, MA Skylar-Scott. Engineering Pluripotent Stem Cells to Enable Growth Factor-Free Cell Culture. Poster. Stanford Bio-X Seed Grants Poster Session, Stanford University, 2022.

JD Weiss, MA Skylar-Scott. Life in Three Dimensions. Lecture. BIOE 44: Fundamentals for Engineering Biology, Stanford University, 2022.