

# Stanford

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## Mark A. Skylar-Scott

Assistant Professor of Bioengineering

### CONTACT INFORMATION

#### • Administrative Contact

Sheryll DeVega - Administrative Associate

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### Bio

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### ACADEMIC APPOINTMENTS

- Assistant Professor, Bioengineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Neurosciences Institute

### Teaching

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### COURSES

#### 2021-22

- Fundamentals for Engineering Biology Lab: BIOE 44 (Aut, Win)
- Tissue Engineering: BIOE 260 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Ali Kight, Elaine Lui, Zachary Sexton

#### Postdoctoral Faculty Sponsor

Jianyi Du

#### Doctoral Dissertation Advisor (AC)

Danielle Klinger, Joshua Sampson, Soham Sinha, Fredrik Samdal Solberg, Jonathan Weiss

#### Doctoral Dissertation Co-Advisor (AC)

Vincent Cornelius

#### Doctoral (Program)

Gokul Kannan, Danielle Klinger, Abena Peasah, Joshua Sampson, Jonathan Weiss, Will Yu

## Publications

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### PUBLICATIONS

- **Biomufacturing human tissues via organ building blocks.** *Cell stem cell*  
Wolf, K. J., Weiss, J. D., Uzel, S. G., Skylar-Scott, M. A., Lewis, J. A.  
2022; 29 (5): 667-677
- **Programming Cellular Alignment in Engineered Cardiac Tissue via Bioprinting Anisotropic Organ Building Blocks.** *Advanced materials (Deerfield Beach, Fla.)*  
Ahrens, J., Uzel, S., Skylar-Scott, M., Mata, M., Lu, A., Kroll, K., Lewis, J. A.  
2022: e2200217
- **Orthogonally induced differentiation of stem cells for the programmatic patterning of vascularized organoids and bioprinted tissues.** *Nature biomedical engineering*  
Skylar-Scott, M. A., Huang, J. Y., Lu, A., Ng, A. H., Duenki, T., Liu, S., Nam, L. L., Damaraju, S., Church, G. M., Lewis, J. A.  
2022
- **Bioprinted microvasculature: progressing from structure to function.** *Biofabrication*  
Seymour, A. J., Westerfield, A. D., Cornelius, V. C., Skylar-Scott, M. A., Heilshorn, S.  
1800
- **Reconstructing the heart using iPSCs: Engineering strategies and applications.** *Journal of molecular and cellular cardiology*  
Cho, S., Lee, C., Skylar-Scott, M. A., Heilshorn, S. C., Wu, J. C.  
2021
- **Flow-enhanced vascularization and maturation of kidney organoids in vitro** *NATURE METHODS*  
Homan, K. A., Gupta, N., Kroll, K. T., Kolesky, D. B., Skylar-Scott, M., Miyoshi, T., Mau, D., Valerius, M., Ferrante, T., Bonventre, J. V., Lewis, J. A., Morizane, R.  
2019; 16 (3): 255-+
- **Voxelated soft matter via multimaterial multinozzle 3D printing.** *Nature*  
Skylar-Scott, M. A., Mueller, J. n., Visser, C. W., Lewis, J. A.  
2019; 575 (7782): 330–35
- **Biomufacturing of organ-specific tissues with high cellular density and embedded vascular channels.** *Science advances*  
Skylar-Scott, M. A., Uzel, S. G., Nam, L. L., Ahrens, J. H., Truby, R. L., Damaraju, S. n., Lewis, J. A.  
2019; 5 (9): eaaw2459
- **In Vitro Human Tissues via Multi-material 3-D Bioprinting** *ATLA-ALTERNATIVES TO LABORATORY ANIMALS*  
Kolesky, D. B., Homan, K. A., Skylar-Scott, M., Lewis, J. A.  
2018; 46 (4): 209–15
- **3D printed structures for modeling the Young's modulus of bamboo parenchyma** *ACTA BIOMATERIALIA*  
Dixon, P. G., Muth, J. T., Xiao, X., Skylar-Scott, M. A., Lewis, J. A., Gibson, L. J.  
2018; 68: 90-98
- **3D nanofabrication by volumetric deposition and controlled shrinkage of patterned scaffolds.** *Science (New York, N.Y.)*  
Oran, D. n., Rodrigues, S. G., Gao, R. n., Asano, S. n., Skylar-Scott, M. A., Chen, F. n., Tillberg, P. W., Marblestone, A. H., Boyden, E. S.  
2018; 362 (6420): 1281–85
- **Multi-photon microfabrication of three-dimensional capillary-scale vascular networks**  
Skylar-Scott, M. A., Liu, M., Wu, Y., Yanik, M., VonFreymann, G., Schoenfeld, W. V., Rumpf, R. C.  
SPIE-INT SOC OPTICAL ENGINEERING.2017
- **Bioprinting of 3D Convoluted Renal Proximal Tubules on Perfusable Chips** *SCIENTIFIC REPORTS*  
Homan, K. A., Kolesky, D. B., Skylar-Scott, M. A., Herrmann, J., Obuobi, H., Moisan, A., Lewis, J. A.  
2016; 6: 34845

- **Laser-assisted direct ink writing of planar and 3D metal architectures** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Skylar-Scott, M. A., Gunasekaran, S., Lewis, J. A.  
2016; 113 (22): 6137–42
- **Guided Homing of Cells in Multi-Photon Microfabricated Bioscaffolds** *ADVANCED HEALTHCARE MATERIALS*  
Skylar-Scott, M. A., Liu, M., Wu, Y., Dixit, A., Yanik, M.  
2016; 5 (10): 1233–43
- **Three-dimensional bioprinting of thick vascularized tissues** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kolesky, D. B., Homan, K. A., Skylar-Scott, M. A., Lewis, J. A.  
2016; 113 (12): 3179–84
- **Synchronous Symmetry Breaking in Neurons with Different Neurite Counts** *PLOS ONE*  
Wissner-Gross, Z. D., Scott, M. A., Steinmeyer, J. D., Yanik, M.  
2013; 8 (2): e54905
- **Electrokinetic confinement of axonal growth for dynamically configurable neural networks** *LAB ON A CHIP*  
Honegger, T., Scott, M. A., Yanik, M. F., Voldman, J.  
2013; 13 (4): 589-598
- **Ultra-rapid laser protein micropatterning: screening for directed polarization of single neurons** *LAB ON A CHIP*  
Scott, M. A., Wissner-Gross, Z. D., Yanik, M.  
2012; 12 (12): 2265-2276
- **Synapse microarray identification of small molecules that enhance synaptogenesis** *NATURE COMMUNICATIONS*  
Shi, P., Scott, M. A., Ghosh, B., Wan, D., Wissner-Gross, Z., Mazitschek, R., Haggarty, S. J., Yanik, M.  
2011; 2: 510
- **Large-scale analysis of neurite growth dynamics on micropatterned substrates** *INTEGRATIVE BIOLOGY*  
Wissner-Gross, Z. D., Scott, M. A., Ku, D., Ramaswamy, P., Yanik, M.  
2011; 3 (1): 65-74
- **Construction of a femtosecond laser microsurgery system** *NATURE PROTOCOLS*  
Steinmeyer, J. D., Gilleland, C. L., Pardo-Martin, C., Angel, M., Rohde, C. B., Scott, M. A., Yanik, M.  
2010; 5 (3): 395-407