Stanford

Ngan F. Huang

Associate Professor of Cardiothoracic Surgery (Cardiothoracic Surgery Research) and, by courtesy, of Chemical Engineering

NIH Biosketch available Online

Bio

BIO

Ngan F. Huang is an Associate Professor in the Department of Cardiothoracic Surgery at Stanford University and Principal Investigator at the Veterans Affairs Palo Alto Health Care System. Dr. Huang completed her BS in Chemical Engineering from the Massachusetts Institute of Technology, followed by a PhD in bioengineering from the University of California Berkeley & University of California San Francisco Joint Program in Bioengineering. Prior to joining the faculty, she was a postdoctoral scholar in the Division of Cardiovascular Medicine at Stanford University. Her laboratory investigates the interactions between stem cells and extracellular matrix microenvironment for engineering cardiovascular tissues to treat cardiovascular and musculoskeletal diseases. Dr. Huang has authored over 90 publications and patents, including reports in Nat Med, PNAS, and Nano Lett. She has received numerous honors, including a NIH K99/R00 Career Development Award, Fellow of the American Heart Association, a Young Investigator award from the Society for Vascular Medicine, a Young Investigator Award from the Tissue Engineering and Regenerative Medicine International Society-Americas, and a Rising Star award at the Cell & Molecular Bioengineering conference. Her research is funded by the NIH, Department of Defense, California Institute of Regenerative Medicine, American Heart Association, and Department of Veteran Affairs.

ACADEMIC APPOINTMENTS

- Associate Professor, Cardiothoracic Surgery
- Associate Professor (By courtesy), Chemical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Faculty Fellow, Sarafan ChEM-H

ADMINISTRATIVE APPOINTMENTS

- Instructor, School of Medicine, (2010-2012)
- Biomedical Engineer, Veterans Affairs Palo Alto Health Care System, (2012- present)
- Assistant Professor, Cardiothoracic Surgery, (2013-2022)
- Steering Committee Member, Cardiovascular Institute, (2013- present)
- Faculty Fellow, Stanford McCormick and Gabilan Faculty Award, (2015-2016)
- Courtesy Assistant Professor, Chemical Engineering, (2021- present)
- Associate Professor, Cardiothoracic Surgery, (2022- present)

HONORS AND AWARDS

- Research Career Scientist Award, Department of Veterans Affairs (2023-2028)
- Most Talked About Paper: Multi-scale cellular engineering. https://doi.org/10.1063/1.5129788, APL Bioengineering (2020)
- Finalist, RegMedNet Award for Cultivating Excellence, RegMedNet (2017)
- Jay D. Coffman Young Investigator Award, 2nd Place Winner, American Heart Association Council on Peripheral Vascular Disease, (2017)
- Rising Star Award, Cellular and Molecular Bioengineering Annual Conference (2017)
- Young Innovator Award, journal of Cellular and Molecular Bioengineering (2017)
- Young Investigator Award, Tissue Engineering and Regenerative Medicine-Americas (2017)
- Fellow of the American Heart Association (FAHA), American Heart Association (2016)
- Robert W Hobson II MD Early Career Investigator Award, American Heart Association Council on Peripheral Vascular Disease (2012)
- Jay D. Coffman Young Investigator Award, First Place in Basic Science, Society for Vascular Medicine (2011)
- NRSA Postdoctoral Fellowship, NIH (2009-2010)
- Postdoctoral Fellowship, American Heart Association (2008-2009)
- K99/R00 Pathways to Independence, NIH (09/01/10-Present)
- National Scientist Development Grant, American Heart Association (06/01/10-08/31/10)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair of Membership Committee, Tissue Engineering and Regenerative Medicine-Americas (2023 - present)
- Diversity Committee Member, North American Vascular Biology Organization (2023 - present)
- Specialty Chief Editor, Frontiers in Cardiovascular Medicine (2022 - present)
- Diversity Committee Member, Biomedical Engineering Society (2021 - present)
- Diversity Committee Member, American Heart Association, Council on Arteriosclerosis Thrombosis and Vascular Biology (2021 - present)
- Chair, Tissue Engineering Special Interest Group, Society for Biomaterials (2021 - 2023)
- Chair, Cardiovascular Biomaterials special interest group, Society for Biomaterials (2021 - 2023)
- Membership Committee Member, Biomedical Engineering Society (2020 - present)
- Women’s Leadership Committee, American Heart Association, Council on Arteriosclerosis Thrombosis and Vascular Biology (2020 - present)
- Advisory Board, Biomaterials Science (2019 - present)
- Editorial Board, Frontiers in Bioengineering and Biotechnology (2019 - present)
- Chair, Cardiac & Vascular Regeneration and Remodeling Thematic Working Interest Group, Tissue Engineering and Regenerative Medicine-Americas (TERMIS-Am) (2019 - 2022)
- Editorial Board Member, Scientific Reports (2018 - present)
- Editorial Board Member, Communications Biology (2018 - present)
- Membership Committee Chair, International Society of Applied Cardiovascular Biology (ISACB) (2018 - present)
- Cardiovascular Committee Member, New Organ Alliance Roadmap (2017 - present)
- Fellow of the American Heart Association (FAHA), 2016 American Heart Association Council on Peripheral Vascular Disease (2016 - present)
- International Committee Member, Biomedical Engineering Society (2016 - present)
- Early Career and Fellows in Training Committee member, American Heart Association, Council on Peripheral Vascular Disease, (2014 - present)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, University of CA Berkeley , Bioengineering (2006)
- Master of Science, University of CA Berkeley , Bioengineering (2005)

- Bachelor of Science, MIT , Chemical Engineering (2002)

PATENTS

- Ji Su, Ngan Huang. "United States Patent 7,252,884 Carbon Nanotube/fiber Reinforced Three Dimensionally Ordered Nano Scale Porous Carbon and the Process", NASA
- Huang NF, Zaitseva T, Paukshto M, Fuller GG, Cooke JP, Martin GR.. "United States Patent 10,238,769B2 A Graft For Directed Vascular And Lymphatic Regeneration And Methods To Guide Endothelial Cell Assembly", Fibralign Corporation and The Board of Trustees of Leland Stanford Junior University, Apr 1, 2019
- Hong G, Lee J, Huang NF, Cooke JP, Dai H. "United States Patent 10,264,974 Vascular imaging using near infrared fluorescence.", The Board of Trustees of Leland Stanford Junior University., Apr 1, 2019

LINKS

- Huang Lab Website: http://huanglab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Huang's laboratory aims to understand the chemical and mechanical interactions between extracellular matrix (ECM) proteins and pluripotent stem cells that regulate vascular and myogenic function. The fundamental insights of cell-matrix interactions are applied towards stem cell-based therapies with respect to improving cell survival and regenerative capacity, as well as engineered vascularized tissues for therapeutic transplantation. Current projects focus on various aspects of mechanical and physical factors on tissue regeneration. Examples include:

1) Cellular Biomechanics for in High Through Chemical Screening: To develop new technology for high-throughput quantitative assessment of vascular endothelial cell biomechanics for cardiovascular drug screening. We hypothesize that cellular biomechanics can be a predictive biomarker of endothelial health.

2) Engineered Matrix Microarrays to Enhance the Regenerative Potential of iPSC-Derived Endothelial Cells: We propose to develop a combinatorial family of engineered ECMs (eECMs) with independently tunable biochemical and biomechanical cues, including stiffness and stress relaxation rate for high-throughput, matrix array studies of induced pluripotent stem cell-derived endothelial cell (iPSC-EC) survival and angiogenic potential. The optimally designed eECMs will then be coinjected with iPSC-EC for treatment of peripheral arterial disease in a mouse model of hindlimb ischemia (Sponsor: NIH).

3) iPSC-Derived Smooth Muscle Progenitors for Treatment of Abdominal Aortic Aneurysm: We propose to deliver human induced pluripotent stem cell-derived smooth muscle progenitors to the site of abdominal aortic aneurysm will replenish smooth muscle cells, enhance elastin production, and abrogate wall dilatation in a murine model (Sponsor: CIRM).

4) Vascularized Cardiac Patch with Physiological Orientation for Myocardial Repair: The aims are to engineer a vascularized aligned iPSC-derived CM (cardiomyocyte) patch and elucidating the molecular mechanisms of ECM-mediated nitric oxide signaling in enhancing iPSC-CM survival and phenotype; and to determine the therapeutic effect of a vascularized aligned iPSC-derived CM patch for treatment of myocardial infarction (Sponsor: Dept of Veteran Affairs).

Dr. Huang's laboratory research is funded by the National Institues of Health, Department of Defense, California Institute for Regenerative Medicine, and the Department of Veteran Affairs.

Teaching

COURSES

2023-24

- Cardiovascular and Pulmonary Sciences Seminar: MED 223 (Aut, Win)
- Stem Cells in Cardiovascular Regenerative Medicine: CTS 225 (Spr)

2022-23

- Cardiovascular and Pulmonary Sciences Seminar: MED 223 (Aut, Win)
- Stem Cells in Cardiovascular Regenerative Medicine: CTS 225 (Spr)

2021-22

- Cardiovascular and Pulmonary Sciences Seminar: MED 223 (Aut, Win)
- Stem Cells in Cardiovascular Regenerative Medicine: CTS 225 (Spr)

2020-21

- Cardiovascular and Pulmonary Sciences Seminar: MED 223 (Aut, Win)
- Stem Cells in Cardiovascular Regenerative Medicine: CTS 225 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Carlos Aldrete, Narelli Paiva

Postdoctoral Faculty Sponsor

Gaoxian Chen, Ishita Jain, Beu Oropeza

Doctoral Dissertation Co-Advisor (AC)

Ada Undieh

Publications

PUBLICATIONS

- **Bioengineering Cell Therapy for Treatment of Peripheral Artery Disease.** *Arteriosclerosis, thrombosis, and vascular biology*
  Huang, N. F., Stern, B., Oropeza, B. P., Zaitseva, T. S., Paukshto, M. V., Zoldan, J.
  2024
- **Special issue: Frontiers in biomaterials for cardiovascular health.** *Journal of biomedical materials research. Part A*
  Bashur, C. A., Huang, N. F.
  2023
- **Editorial: Insights in cardiovascular biologics and regenerative medicine: 2022.** *Frontiers in cardiovascular medicine*
  Madeddu, P., Huang, N. F.
  2023; 10: 1333866
- **Cardiovascular human organ-on-a-chip platform for disease modeling, drug development, and personalized therapy.** *Journal of biomedical materials research. Part A*
  Khanna, A., Oropeza, B. P., Huang, N. F.
  2023
- **Combinatorial extracellular matrix cues with mechanical strain induce differential effects on myogenesis in vitro.** *Biomaterials science*
  Chan, A. H., Jain, I., Oropeza, B. P., Zhou, T., Nelsen, B., Geisse, N. A., Huang, N. F.
  2023
- **Development of a rat model of lymphedema and the implantation of a collagen-based medical device for therapeutic intervention.** *Frontiers in cardiovascular medicine*
  Nguyen, D., Dionyssiou, D., Zaitseva, T. S., Zhou, A. T., Sue, G., Deptula, P., Moroz, M. A., Tabada, P., Rockson, S. G., Paukshto, M. V., Cheng, M. H., Huang, N. F.
  2023; 10: 1214116

- **Multiomics Analyses of Peripheral Artery Disease Muscle Biopsies.** *Circulation research*
  Jain, I., Oropeza, B. P., Huang, N. F.
  2023; 132 (11): 1444-1446

- **Elastin-like protein hydrogels with controllable stress relaxation rate and stiffness modulate endothelial cell function.** *Journal of biomedical materials research. Part A*
  Shayan, M., Huang, M. S., Navarro, R., Chiang, G., Hu, C., Oropeza, B. P., Johansson, P. K., Suhar, R. A., Foster, A. A., LeSavage, B. L., Zamani, M., Enejder, A., Roth, et al
  2023

- **Biomedical Applications of Collagen.** *Bioengineering (Basel, Switzerland)*
  Huang, N. F., Zaitseva, T. S., Paukshto, M. V.
  2023; 10 (1)

- **Chronic nicotine impairs the angiogenic capacity of human induced pluripotent stem cell-derived endothelial cells in a murine model of peripheral arterial disease.** *JVS-vascular science*
  Chan, A. H., Hu, C., Chiang, G. C., Ekweume, C., Huang, N. F.
  2023; 4: 100115

- **Single-Cell Transcriptomic Census of Endothelial Changes Induced by Matrix Stiffness and the Association with Atherosclerosis.** *Advanced functional materials*
  Zamani, M., Cheng, Y. H., Charbonier, F., Gupta, V. K., Mayer, A. T., Trevino, A. E., Quertermous, T., Chaudhuri, O., Cahan, P., Huang, N. F.
  2022; 32 (47)

- **Engineering Spatiotemporal Control in Vascularized Tissues.** *Bioengineering (Basel, Switzerland)*
  Khanna, A., Oropeza, B. P., Huang, N. F.
  2022; 9 (10)

- **Scalable macroporous hydrogels enhance stem cell treatment of volumetric muscle loss.** *Biomaterials*
  Eugenis, I., Wu, D., Hu, C., Chiang, G., Huang, N. F., Rando, T. A.
  2022; 290: 121818

- **Single-Cell Transcriptomic Census of Endothelial Changes Induced by Matrix Stiffness and the Association with Atherosclerosis** *ADVANCED FUNCTIONAL MATERIALS*
  Zamani, M., Cheng, Y., Charbonier, F., Gupta, V., Mayer, A. T., Trevino, A. E., Quertermous, T., Chaudhuri, O., Cahan, P., Huang, N. F.
  2022

- **Editorial: Frontiers in Cardiovascular Medicine: Rising Stars 2021.** *Frontiers in cardiovascular medicine*
  Wang, L., Xu, G. E., Pan, L., Aikawa, E., Aikawa, M., Xiao, J., Huang, N. F.
  2022; 9: 928981

- **Advances in three-dimensional bioprinted stem cell-based tissue engineering for cardiovascular regeneration.** *Journal of molecular and cellular cardiology*
  Khanna, A., Ayan, B., Undieh, A. A., Yang, Y. P., Huang, N. F.
  2022; 169: 13-27

- **INSULIN-LIKE GROWTH FACTOR-1 LADEN SCAFFOLDS WITH REHABILITATIVE EXERCISE IMPROVES MUSCLE REGENERATION**
  Huang, N. F., Nakayam, K., Alcazar, C., Hu, C., Rando, T.
  MARY ANN LIEBERT, INC.2022: S584

- **Dual delivery of BMP-2 and IGF-1 through injectable hydrogel promotes cranial bone defect healing.** *Tissue engineering. Part A*
  Park, Y., Lin, S., Bai, Y., Moeinzadeh, S., Kim, S., Huang, J., Lee, U., Huang, N. F., Yang, Y. P.
  2022

- **Comparative Effects of Basic Fibroblast Growth Factor Delivery or Voluntary Exercise on Muscle Regeneration after Volumetric Muscle Loss.** *Bioengineering (Basel, Switzerland)*
  Hu, C., Ayan, B., Chiang, G., Chan, A. H., Rando, T. A., Huang, N. F.
  1800; 9 (1)

- **Extracellular Matrix-Based Biomaterials for Cardiovascular Tissue Engineering.** *Journal of cardiovascular development and disease*
  Khanna, A., Zamani, M., Huang, N. F.

2021; 8 (11)

- **What Makes a Great Mentor: Interviews With Recipients of the ATVB Mentor of Women Award.** *Arteriosclerosis, thrombosis, and vascular biology*
  Zhang, H., Chen, Z. B., Fredman, G., Gomez, D., Grumbach, I. M., Huang, N. F., Nguyen, P., Ouimet, M., Sutton, N. R., Aikawa, E.
  2021: ATVBAHA121316558

- **peri-Adventitial delivery of smooth muscle cells in porous collagen scaffolds for treatment of experimental abdominal aortic aneurysm.** *Biomaterials science*
  Mulorz, J., Shayan, M., Hu, C., Alcazar, C., Chan, A. H., Briggs, M., Wen, Y., Walvekar, A. P., Ramasubramanian, A. K., Spin, J. M., Chen, B., Tsao, P. S., Huang, et al
  2021

- **Modest Gains After an 8-Week Exercise Program Correlate With Reductions in Non-traditional Markers of Cardiovascular Risk** *FRONTIERS IN CARDIOVASCULAR MEDICINE*
  Liang, G., Huang, X., Hirsch, J., Mehmi, S., Fonda, H., Chan, K., Huang, N. F., Aalami, O., Froelicher, V. F., Lee, D. P., Myers, J., Lee, A. S., Nguyen, et al
  2021; 8: 669110

- **Recent advances in bioprinting technologies for engineering cardiac tissue.** *Materials science & engineering. C, Materials for biological applications*
  Agarwal, T., Fortunato, G. M., Hann, S. Y., Ayan, B., Vajanthri, K. Y., Presutti, D., Cui, H., Chan, A. H., Costantini, M., Onesto, V., Di Natale, C., Huang, N. F., Makvandi, et al
  2021; 124: 112057

- **Engineering Cardiovascular Tissue Chips for Disease Modeling and Drug Screening Applications.** *Frontiers in bioengineering and biotechnology*
  Chan, A. H., Huang, N. F.
  2021; 9: 673212

- **Transplantation of insulin-like growth factor-1 laden scaffolds combined with exercise promotes neuroregeneration and angiogenesis in a preclinical muscle injury model** *BIOMATERIALS SCIENCE*
  Alcazar, C. A., Hu, C., Rando, T. A., Huang, N. F., Nakayama, K. H.
  2020; 8 (19): 5376–89

- **Pre-Clinical Cell Therapeutic Approaches for Repair of Volumetric Muscle Loss.** *Bioengineering (Basel, Switzerland)*
  Shayan, M., Huang, N. F.
  2020; 7 (3)

- **Delivery of hepatocyte growth factor mRNA from nanofibrillar scaffolds in a pig model of peripheral arterial disease.** *Regenerative medicine*
  S Zaitseva, T., Yang, G., Dionyssiou, D., Zamani, M., Sawamura, S., Yakubov, E., Ferguson, J., Hallett, R. L., Fleischmann, D., Paukshto, M. V., Huang, N. F.
  2020

- **Effects of nicotine on the translation of stem cell therapy.** *Regenerative medicine*
  Chan, A. H., Huang, N. F.
  2020

- **Delivery of Human Stromal Vascular Fraction Cells on Nanofibrillar Scaffolds for Treatment of Peripheral Arterial Disease.** *Frontiers in bioengineering and biotechnology*
  Hu, C. n., Zaitseva, T. S., Alcazar, C. n., Tabada, P. n., Sawamura, S. n., Yang, G. n., Borrelli, M. R., Wan, D. C., Nguyen, D. H., Paukshto, M. V., Huang, N. F.
  2020; 8: 689

- **Multi-scale cellular engineering: From molecules to organ-on-a-chip.** *APL bioengineering*
  Huang, N. F., Chaudhuri, O. n., Cahan, P. n., Wang, A. n., Engler, A. J., Wang, Y. n., Kumar, S. n., Khademhosseini, A. n., Li, S. n.
  2020; 4 (1): 010906

- **Vascularization of Engineered Spatially Patterned Myocardial Tissue Derived From Human Pluripotent Stem Cells in vivo** *FRONTIERS IN BIOENGINEERING AND BIOTECHNOLOGY*
  Wanjare, M., Kawamura, M., Hu, C., Alcazar, C., Wang, H., Woo, Y., Huang, N. F.
  2019; 7

- **Vascularization of Engineered Spatially Patterned Myocardial Tissue Derived From Human Pluripotent Stem Cells in vivo.** *Frontiers in bioengineering and biotechnology*
  Wanjare, M., Kawamura, M., Hu, C., Alcazar, C., Wang, H., Woo, Y. J., Huang, N. F.
  2019; 7: 208

- **Treatment of volumetric muscle loss in mice using nanofibrillar scaffolds enhances vascular organization and integration** *COMMUNICATIONS BIOLOGY*
  Nakayama, K. H., Quarta, M., Paine, P., Alcazar, C., Karakikes, I., Garcia, V., Abilez, O. J., Calvo, N. S., Simmons, C. S., Rando, T. A., Huang, N. F.
  2019; 2

- **Engineering Biomimetic Materials for Skeletal Muscle Repair and Regeneration** *ADVANCED HEALTHCARE MATERIALS*
  Nakayama, K. H., Shayan, M., Huang, N. F.
  2019; 8 (5)

- **Endothelial Cell Mechanotransduction in the Dynamic Vascular Environment** *ADVANCED BIOSYSTEMS*
  Charbonier, F. W., Zamani, M., Huang, N. F.
  2019; 3 (2)

- **Treatment of volumetric muscle loss in mice using nanofibrillar scaffolds enhances vascular organization and integration.** *Communications biology*
  Nakayama, K. H., Quarta, M. n., Paine, P. n., Alcazar, C. n., Karakikes, I. n., Garcia, V. n., Abilez, O. J., Calvo, N. S., Simmons, C. S., Rando, T. A., Huang, N. F.
  2019; 2 (1): 170

- **Small Molecule Derived From Carboxyethylpyrrole Protein Adducts Promotes Angiogenesis in a Mouse Model of Peripheral Arterial Disease.** *Journal of the American Heart Association*
  Hou, L., Yang, G., Tang, S., Alcazar, C., Joshi, P., Strassberg, Z., Kim, M., Kawamura, M., Woo, Y. J., Shrager, J., Ding, S., Huang, N. F.
  2018; 7 (18): e009234

- **Rehabilitative exercise and spatially patterned nanofibrillar scaffolds enhance vascularization and innervation following volumetric muscle loss** *NPJ REGENERATIVE MEDICINE*
  Nakayama, K. H., Alcazar, C., Yang, G., Quarta, M., Paine, P., Doan, L., Davies, A., Rando, T. A., Huang, N. F.
  2018; 3: 16

- **Near-Infrared IIb Fluorescence Imaging of Vascular Regeneration with Dynamic Tissue Perfusion Measurement and High Spatial Resolution** *ADVANCED FUNCTIONAL MATERIALS*
  Ma, Z., Zhang, M., Yue, J., Alcazar, C., Zhong, Y., Doyle, T. C., Dai, H., Huang, N. F.
  2018; 28 (36)

- **Protein-engineered hydrogels enhance the survival of induced pluripotent stem cell-derived endothelial cells for treatment of peripheral arterial disease** *BIOMATERIALS SCIENCE*
  Foster, A. A., Dewi, R. E., Cai, L., Hou, L., Strassberg, Z., Alcazar, C. A., Heilshorn, S. C., Huang, N. F.
  2018; 6 (3): 614–22

- **Aligned Nanofibrillar Scaffolds for Controlled Delivery of Modified mRNA.** *Tissue engineering. Part A*
  Zaitseva, T. n., Alcazar, C. n., Zamani, M. n., Hou, L. n., Sawamura, S. n., Yakubov, E. n., Hopkins, M. n., Woo, Y. J., Paukshto, M. n., Huang, N. F.
  2018

- **Multicellular Interactions in 3D Engineered Myocardial Tissue.** *Frontiers in cardiovascular medicine*
  Zamani, M., Karaca, E., Huang, N. F.
  2018; 5: 147

- **Big bottlenecks in cardiovascular tissue engineering** *COMMUNICATIONS BIOLOGY*
  Huang, N. F., Serpooshan, V., Morris, V. B., Sayed, N., Pardon, G., Abilez, O. J., Nakayama, K. H., Pruitt, B. L., Wu, S. M., Yoon, Y., Zhang, J., Wu, J. C.
  2018; 1

- **Microfibrous Scaffolds Enhance Endothelial Differentiation and Organization of Induced Pluripotent Stem Cells** *CELLULAR AND MOLECULAR BIOENGINEERING*
  Kim, J. J., Hou, L., Yang, G., Mezak, N. P., Wanjare, M., Joubert, L. M., Huang, N. F.
  2017; 10 (5): 417–32

- **Delivery of Hepatocyte Growth Factor mRNA From Nanofibrillar Scaffolds for Treatment of Peripheral Arterial Disease**
  Huang, N. F., Hou, L., Alcazar, C., Strassberg, Z., Hopkins, M., Zaitseva, T., Yakubov, E., Paukshto, M. V.
  LIPPINCOTT WILLIAMS & WILKINS.2017

- **Combinatorial Extracellular Matrix Microenvironments for Probing Endothelial Differentiation of Human Pluripotent Stem Cells**
  Hou, L., Kim, J. J., Wanjare, M. J., Patlolla, B., Coller, J., Natu, V., Hastie, T., Huang, N. F.
  FEDERATION AMER SOC EXP BIOL.2017

- **Regulation of the microenvironment for cardiac tissue engineering.** *Regenerative medicine*
  Wanjare, M., Huang, N. F.
  2017; 12 (2): 187-201

- **A comparison of the pro-angiogenic potential of human induced pluripotent stem cell derived endothelial cells and induced endothelial cells in a murine model of peripheral arterial disease.** *International journal of cardiology*
  Clayton, Z. E., Yuen, G. S., Sadeghipour, S., Hywood, J. D., Wong, J. W., Huang, N. F., Ng, M. K., Cooke, J. P., Patel, S.
  2017

- **Boosting the down-shifting luminescence of rare-earth nanocrystals for biological imaging beyond 1500 nm.** *Nature communications*
  Zhong, Y. n., Ma, Z. n., Zhu, S. n., Yue, J. n., Zhang, M. n., Antaris, A. L., Yuan, J. n., Cui, R. n., Wan, H. n., Zhou, Y. n., Wang, W. n., Huang, N. F., Luo, et al
  2017; 8 (1): 737

- **Anisotropic microfibrous scaffolds enhance the organization and function of cardiomyocytes derived from induced pluripotent stem cells.** *Biomaterials science*
  Wanjare, M. n., Hou, L. n., Nakayama, K. H., Kim, J. J., Mezak, N. P., Abilez, O. J., Tzatzalos, E. n., Wu, J. C., Huang, N. F.
  2017; 5 (8): 1567–78

- **Induced Pluripotent Stem Cell-Derived Endothelial Cells in Insulin Resistance and Metabolic Syndrome.** *Arteriosclerosis, thrombosis, and vascular biology*
  Carcamo-Orive, I. n., Huang, N. F., Quertermous, T. n., Knowles, J. W.
  2017; 37 (11): 2038–42

- **In Vivo Study of Human Endothelial-Pericyte Interaction Using the Matrix Gel Plug Assay in Mouse.** *Journal of visualized experiments : JoVE*
  Yuan, K., Orcholski, M. E., Huang, N. F., de Jesus Perez, V. A.
  2016

- **Combinatorial extracellular matrix microenvironments promote survival and phenotype of human induced pluripotent stem cell-derived endothelial cells in hypoxia** *ACTA BIOMATERIALIA*
  Hou, L., CoIler, J., Natu, V., Hastie, T. J., Huang, N. F.
  2016; 44: 188-199

- **Aligned nanofibrillar collagen scaffolds - Guiding lymphangiogenesis for treatment of acquired lymphedema.** *Biomaterials*
  Hadamitzky, C., Zaitseva, T. S., Bazalova-Carter, M., Paukshto, M. V., Hou, L., Strassberg, Z., Ferguson, J., Matsuura, Y., Dash, R., Yang, P. C., Kretchetov, S., Vogt, P. M., Rockson, et al
  2016; 102: 259-267

- **Vascularization of three-dimensional engineered tissues for regenerative medicine applications.** *Acta biomaterialia*
  Kim, J. J., Hou, L., Huang, N. F.
  2016; 41: 17-26

- **Distilling complexity to advance cardiac tissue engineering** *SCIENCE TRANSLATIONAL MEDICINE*
  Ogle, B. M., Bursac, N., Domian, I., Huang, N. F., Menasche, P., Murry, C. E., Pruitt, B., Radisic, M., Wu, J. C., Wu, S. M., Zhang, J., Zimmermann, W., Vunjak-Novakovic, et al
  2016; 8 (342)

- **Targeted delivery of human iPS-ECs overexpressing IL-8 receptors inhibits neointimal and inflammatory responses to vascular injury in the rat.** *American journal of physiology. Heart and circulatory physiology*
  Giordano, S., Zhao, X., Xing, D., Hage, F., Oparil, S., Cooke, J. P., Lee, J., Nakayama, K. H., Huang, N. F., Chen, Y.
  2016; 310 (6): H705-15

- **Stem cell-based therapies to promote angiogenesis in ischemic cardiovascular disease** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*
  Hou, L., Kim, J. J., Woo, Y. J., Huang, N. F.
  2016; 310 (4): H455-H465

- **Polymer-DNA Nanoparticle-Induced CXCR4 Overexpression Improves Stem Cell Engraftment and Tissue Regeneration in a Mouse Hindlimb Ischemia Model** *THERANOSTICS*
  Deveza, L., Choi, J., Lee, J., Huang, N., Cooke, J., Yang, F.
  2016; 6 (8): 1176-1189

- **Nanoscale Patterning of Extracellular Matrix Alters Endothelial Function under Shear Stress** *NANO LETTERS*

Nakayama, K. H., Surya, V. N., Gole, M., Walker, T. W., Yang, W., Lai, E. S., Ostrowski, M. A., Fuller, G. G., Dunn, A. R., Huang, N. F.
2016; 16 (1): 410-419

- **Aligned-Braided Nanofibrillar Scaffold with Endothelial Cells Enhances Arteriogenesis.** *ACS nano*
  Nakayama, K. H., Hong, G., Lee, J. C., Patel, J., Edwards, B., Zaitseva, T. S., Paukshto, M. V., Dai, H., Cooke, J. P., Woo, Y. J., Huang, N. F.
  2015; 9 (7): 6900-6908

- **Activation of the Wnt/Planar Cell Polarity Pathway Is Required for Pericyte Recruitment during Pulmonary Angiogenesis.** *American journal of pathology*
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