Stanford



# Yunzhi Peter Yang

Professor of Orthopaedic Surgery and, by courtesy, of Materials Science and Engineering and of Bioengineering

## Bio

### ACADEMIC APPOINTMENTS

- Professor, Orthopaedic Surgery
- Professor (By courtesy), Materials Science and Engineering
- Professor (By courtesy), Bioengineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

### ADMINISTRATIVE APPOINTMENTS

- Editorial Board, The International Journal of Oral & Maxillofacial Implants, (2007-2012)
- Voting member, U.S. Technical Advisory Group for ISO/TC 106 Dentistry, (2008- present)
- Director-at-Large, International Association For Dental Research (IADR) Implantology Research Group, (2010-2014)
- Editorial Board, Journal of Cancer Science & Therapy, (2010-2014)
- Editorial Board, Journal of Thermodynamics & Catalysis, (2010-2014)
- Session Editor of Biomaterials topic, Journal of Orthopedic Translation, (2013- present)
- Editorial Board, Genes and Diseases, (2014- present)
- Editorial Board, Tissue Engineering (A, B, C), (2015-2018)
- Associate Editor, Odontology, (2020- present)
- International Editorial Board, Journal of Orthopedic Translation, (2026-2029)

### HONORS AND AWARDS

- Research Award, Memphis Bioworks Foundation (2005-2006)
- Research Award, March of Dimes Foundation (2006-2010)
- Early Career Translational Research Award Phase I, Wallace H Coulter Foundation (2007-2009)
- Research Award, Implant Dentistry Research and Education Foundation (2007-2009)
- Aircast Award for Basic Science, AMERICAN ORTHOPAEDC SOCIETY FOR SPORTS MEDICINE (2008)
- Research Award, UTRF Technology Maturation Fund Program (2008-2009)

- Young Investigator Award, the University of Texas Health Science Center at Houston (2009)
- Early Career Translational Research Award Phase II, Wallace H Coulter Foundation (2009-2012)
- Congressional Briefing on translational research breakthroughs at Capitol Hill, the American Institute of Medical and Biological Engineering (2010)
- Research Award, Airlift Research Foundation (2010-2012)
- Research Award, National Institutes of Health (2010-2014)
- Research Award, Department of Defense (2010-2014)
- Dean's Teaching Excellence Award in Scholarship of Engagement and Collaboration", the University of Texas Health Science Center at Houston (2011)
- Research Award, Boswell Foundation (2011)
- Wallace H. Coulter Fellow, Wallace H. Coulter Foundation (2011)
- Research Award, NanoHealth Alliance (2011-2013)
- Research Award, National Institutes of Health (2011-2015)
- Research Diversity Supplement Award, National Institutes of Health (2012-2014)
- Research Diversity Supplement Award, National Institutes of Health (2012-2015)
- 2014 Defense University Research Instrumentation Program Award, Army Research Office (2014)
- Coulter Translational Research Seed Grant, Stanford Coulter Program (2014)
- Research Award, Foundation of Orthopedic Trauma (2014)
- Spark Seed Grant Award, Stanford Spark Program (2014)
- Research Award, National Institutes of Health (2014-2020)
- Coulter Translational Research Seed Grant, Stanford Coulter Program (2015)
- NIH Transformative Research Award Finalist, National Institutes of Health (2015)
- Star Research Award, National Institute of Health (2015-2020)
- Coulter Translational Research Seed Grant, Stanford Coulter Program (2016)
- Research Award for Clean Energy, The Precourt Institute for Energy and the TomKat Center for Sustainable Energy (2016)
- The 2016 Annals of Biomedical Engineering Award, the Annals of Biomedical Engineering (2016)
- Research Award, National Institutes of Health (NIAMS/NIBIB) (2016-2022)
- Monetary Gift for Research, Kent Thiry and Denise O'Leary (2017)
- Research Award, Stanford Spectrum MedTech Program (2017)
- 2018 TechConnect Innovation Awardee for Hybprinter, TechConnect World Conference (2018)
- Research Award, Orthopaedic Research and Education Foundation (2018-2019)
- Research Award, National Institutes of Health (2018-2023)
- Research Award, AOTrauma North America (2019-2020)
- Research Award, National Institutes of Health (2019-2024)
- AIMBE Fellow, American Institute for Medical and Biological Engineering (AIMBE) (2020)
- Research Award, the Stanford Woods Institute for the Environment's Environmental Venture Projects program (2020-2022)
- Research Award, Department of Defense (2020-2023)
- Research Award, Department of Defense (2022-2026)
- High Impact Technology Award, Stanford University (2023)
- Research Award, National Institutes of Health (2023-2027)
- Stanford Bio-X Seed Grant, Stanford University (2024-2026)

- Stanford Coulter Seed Grant, Stanford Coulter Foundation (2026)

### PROFESSIONAL EDUCATION

- Postdoctoral Fellow, University of Texas Health Science Center at San Antonio, San Antonio, TX , Biomaterials (2003)
- Postdoctoral Fellow, West China University of Medical Sciences, Chengdu, China , Biomaterials (1999)
- Ph.D., Sichuan University, Chengdu, China , Biomedical Engineering (1997)
- M.E., Sichuan University, Chengdu, China , Inorganic Materials (1995)
- B.S., Sichuan University, Chengdu, China , Inorganic Materials (1992)

### LINKS

- Peter Yang Lab Site: http://yanglab.stanford.edu/

## Research & Scholarship

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research focuses on biomaterials, implantable medical devices, drug delivery systems, 3D printing, regenerative medicine, and modular tissue engineering. We are particularly interested in creating bio-inspired materials and platform technologies capable of engineering complex tissues and organs.

We study how tissue-like chemistry, hierarchical structures, and advanced 3D-printing strategies can be integrated into engineered tissues, organs, and medical devices to achieve tissue-mimetic properties and improved biological function. Our goal is to define how these engineered systems enhance musculoskeletal healing and translate into better clinical outcomes.

Our research methodology spans the full translational spectrum—from conceptual design and device development, to advanced additive manufacturing, in-depth material and mechanical characterization, in vitro biological evaluation, and in vivo validation of novel biomaterials and implantable devices. Our current research program integrates three major themes: (1) Bioprinting and enabling technologies for modular tissue engineering and regenerative medicine; (2) Surface nanotechnology for next-generation osseointegrated orthopedic implant devices; (3) Naturally derived biomaterials and smart delivery platforms for cancer treatment.

## Teaching

### COURSES

**2026-27**

- Introduction to Bioengineering Research: BIOE 390, MED 289 (Aut)
- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

**2025-26**

- Introduction to Bioengineering Research: BIOE 390, MED 289 (Aut)
- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

**2024-25**

- Introduction to Bioengineering Research: BIOE 390, MED 289 (Aut)
- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

**2023-24**

- Introduction to Bioengineering Research: BIOE 390, MED 289 (Aut)
- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

### STANFORD ADVISEES

Anjana Balachandar

**Doctoral Dissertation Reader (AC)**

Esther Mozipo

**Postdoctoral Faculty Sponsor**

Shangsi Chen, Yunxia Chen, Peng Zhao

**Doctoral Dissertation Advisor (AC)**

Andrea Flores Perez

## Publications

### PUBLICATIONS

- **Hybrid Bioprinting for functionally graded tissue engineering constructs with patterned and localized biochemical signals.** *Advanced composites and hybrid materials*
  Li, J., Kim, C., Alizadeh, H. V., Garg, S., Bruyas, A., Zhao, P., Passos, I. S., Pan, C. C., Pérez, A. S., Skylar-Scott, M. A., Kim, S., Yang, Y. P.
  2026; 9 (1): 11
- **Tunable Polycaprolactone-Gelatin Methacryloyl Composites for Fused Deposition Modeling Musculoskeletal Scaffold Fabrication.** *Journal of biomedical materials research. Part A*
  Chen, A. A., Li, J., DePond, P. J., Muniz, R. S., Perez, A. S., Lew, A. J., Gardner, M. J., Mohler, D. G., Maloney, W. J., Yang, Y. P.
  2026; 114 (11)
- **A bioactive intramedullary implant enables accelerated bone regeneration and early load-bearing in distraction osteogenesis.** *Acta biomaterialia*
  Uno, T., Lee, T. C., Shah, K., Chen, A. A., Lui, E., Alizadeh, H. V., Li, J., Muniz, R., Zhao, P., Pérez, A. S., Maekawa, H., Kim, S., Cherief, et al
  2026
- **Biofabrication and biomedical manufacturing research frontiers in the United States** *BIO-DESIGN AND MANUFACTURING*
  Chen, Y., Phillips, K. R., Alsberg, E., Angelini, T. E., Annabi, N., Atala, A., Bandyopadhyay, A., Bellan, L. M., Bertassoni, L. E., Blazeski, A., Boland, T., Bose, S., Burdick, et al
  2026
- **VEGF-D-induced intraosseous lymphangiogenesis drives site-specific heterotopic bone resorption.** *Proceedings of the National Academy of Sciences of the United States of America*
  Vishlaghi, N., Griswold-Wheeler, D., Korlakunta, S., Vallejo, A., Mittal, M., Sun, Y., Zhao, P., Yang, Y. P., Rutkowski, J. M., Levi, B., Dellinger, M.
  2026; 123 (19): e2524022123
- **3D Printing Polycaprolactone-Gelatin for Musculoskeletal Tissue Engineering.** *Journal of biomedical materials research. Part A*
  Lui, E., Kobayashi, M., Jain, C., Maekawa, H., Li, J., Moeinzadeh, S., Chen, A. A., Allen-Hicks, W., Levi, B., Matsuda, S., Kawai, T., Yang, Y. P.
  2026; 114 (3): e70051
- **Increased macrophage autophagy with unique polarization in rheumatoid synovium.** *Autophagy*
  Huang, H., Takakubo, Y., Takeda, Y., Uno, T., Satake, H., Asao, H., Futakuchi, M., Yang, Y. P., Goodman, S. B., Takagi, M.
  2026: 1-21
- **3D Hybrid Bioprinting for Complex Multi-Tissue Engineering.** *bioRxiv : the preprint server for biology*
  Alizadeh, H. V., Flores Pérez, A. S., Uno, T., Muniz, R. S., Kwon, S. H., Balachandar, A., Riley, N., Le, C. A., Li, J., Zhao, P., Lui, E., Kim, C., Moeinzadeh, et al
  2025
- **Rapid manufacturing of angiogenic cellular collagen patches for ischemic cardiomyopathy.** *Stem cells translational medicine*

Pfrender, E., Kim, S., Farag, J. A., Yajima, S., Kawai, Y., Kawago, K., Syed, U., Ikeda, G., Ueyama, T., Takashima, H., Dalal, A., Zhu, Y., Ichimura, et al
2025; 14 (9)

- **A Lung Tumor-on-a-Chip Model Recapitulates the Effect of Hypoxia on Radiotherapy Response and FDG-PET Imaging.** *bioRxiv : the preprint server for biology*
  Nasiri, R., Jalil, M. K., Gaspar, V. I., Perez, A. S., Nguyen, H. T., Khan, S., Tang, S. K., Yang, Y. P., Pratx, G.
  2025
- **Injectable alginate/collagen clindamycin hydrogel for treatment of surgical site infections.** *Scientific reports*
  Park, R. K., Kim, S., An, J., Lee, M. C., Yang, Y. P., Valdez, T. A.
  2025; 15 (1): 7964
- **Effect of Axis Change on Shrinkage Rate of 3D-Printed Bioceramic Zirconia Fabricated via Digital Light Processing.** *Biomimetics (Basel, Switzerland)*
  Park, J., Jung, Y., Jang, K., Lee, S., Choi, S., Lee, Y., Yang, Y. P., Yun, K.
  2025; 10 (3)
- **Hybrid Zinc Oxide Nanocoating on Titanium Implants: Controlled Drug Release for Enhanced Antibacterial and Osteogenic Performance in Infectious Conditions.** *Acta biomaterialia*
  Zhou, J., Wang, H., Virtanen, S., Witek, L., Dong, H., Thanassi, D., Shen, J., Yang, Y. P., Yu, C., Zhu, D.
  2024
- **Optimizing Tissue Engineering for Clinical Relevance in Rotator Cuff Repair.** *Tissue engineering. Part B, Reviews*
  Durtschi, M., Kim, S., Li, J., Kim, C., Chu, C., Cheung, E., Safran, M., Abrams, G., Yang, Y. P.
  2024
- **Preclinical models for studying corticosteroid-induced osteonecrosis of the femoral head.** *Journal of biomedical materials research. Part B, Applied biomaterials*
  Tsubosaka, M., Maruyama, M., Lui, E., Kushioka, J., Toya, M., Gao, Q., Shen, H., Li, X., Chow, S. K., Zhang, N., Yang, Y. P., Goodman, S. B.
  2024; 112 (1): e35360
- **An osteoinductive and biodegradable intramedullary implant accelerates bone healing and mitigates complications of bone transport in male rats.** *Nature communications*
  Lin, S., Maekawa, H., Moeinzadeh, S., Lui, E., Alizadeh, H. V., Li, J., Kim, S., Poland, M., Gadomski, B. C., Easley, J. T., Young, J., Gardner, M., Mohler, et al
  2023; 14 (1): 4455
- **Metabolic profile of mesenchymal stromal cells and macrophages in the presence of polyethylene particles in a 3D model.** *Stem cell research & therapy*
  Teissier, V., Gao, Q., Shen, H., Li, J., Li, X., Huang, E. E., Kushioka, J., Toya, M., Tsubosaka, M., Hirata, H., Alizadeh, H. V., Maduka, C. V., Contag, et al
  2023; 14 (1): 99
- **Development and characterization of an automated active mixing platform for hydrogel bioink preparation.** *International journal of bioprinting*
  Li, J., Shelby, T., Alizadeh, H. V., Shelby, H., Yang, Y. P.
  2023; 9 (4): 705
- **Chimeric blood vessels sustained development of the xenogeneic antler: a unique model for xenogeneic organ generation.** *Life medicine*
  Wang, D., Wang, X., Ba, H., Ren, J., Wang, Z., Sun, H. X., Chen, L., Liu, C., Wang, Y., Li, J., Liu, L., Liu, T., Yang, et al
  2023; 2 (1): lnac021
- **The efficiency of genetically modified mesenchymal stromal cells combined with a functionally graded scaffold for bone regeneration in corticosteroid-induced osteonecrosis of the femoral head in rabbits.** *Journal of biomedical materials research. Part A*
  Tsubosaka, M., Maruyama, M., Lui, E., Moeinzadeh, S., Huang, E. E., Kushioka, J., Hirata, H., Jain, C., Storaci, H. W., Chan, C., Toya, M., Gao, Q., Teissier, et al
  2023
- **A bioactive compliant vascular graft modulates macrophage polarization and maintains patency with robust vascular remodeling.** *Bioactive materials*
  Stahl, A., Hao, D., Barrera, J., Henn, D., Lin, S., Moeinzadeh, S., Kim, S., Maloney, W., Gurtner, G., Wang, A., Yang, Y. P.

2023; 19: 167-178

- **Development and characterization of an automated active mixing platform for hydrogel bioink preparation** *INTERNATIONAL JOURNAL OF BIOPRINTING*
  Li, J., Shelby, T., Alizadeh, H., Shelby, H., Yang, Y.
  2023; 9 (3)
- **Development and systematic characterization of GelMA/alginate/PEGDMA/xanthan gum hydrogel bioink system for extrusion bioprinting.** *Biomaterials*
  Li, J., Moeinzadeh, S., Kim, C., Pan, C. C., Weale, G., Kim, S., Abrams, G., James, A. W., Choo, H., Chan, C., Yang, Y. P.
  2022; 293: 121969
- **Growth and Differentiation Factor-7 Immobilized, Mechanically Strong Quadrol-Hexamethylene Diisocyanate-Methacrylic Anhydride Polyurethane Polymer for Tendon Repair and Regeneration.** *Acta biomaterialia*
  Wang, D., Zhang, X., Ng, K. W., Rao, Y., Wang, C., Gharaibeh, B., Lin, S., Abrams, G., Safran, M., Cheung, E., Campbell, P., Weiss, L., Ker, et al
  2022
- **TrkA+ Neurons Induce Pathologic Regeneration After Soft Tissue Trauma.** *Stem cells translational medicine*
  Cherief, M., Negri, S., Qin, Q., Pagani, C. A., Lee, S., Yang, Y. P., Clemens, T. L., Levi, B., James, A. W.
  2022
- **Hybprinting for musculoskeletal tissue engineering.** *iScience*
  Li, J., Kim, C., Pan, C., Babian, A., Lui, E., Young, J. L., Moeinzadeh, S., Kim, S., Yang, Y. P.
  2022; 25 (5): 104229
- **EFFICACY OF PRECONDITIONED OR GENETICALLY MODIFIED IL4-SECRETING MESENCHYMAL STROMAL CELLS IN A MODEL OF STEROID-ASSOCIATED OSTEONECROSIS OF THE FEMORAL HEAD IN RABBITS**
  Goodman, S., Maruyama, M., Moeinzadeh, S., Guzman, R., Takagi, M., Yang, Y.
  MARY ANN LIEBERT, INC.2022: S30
- **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
- **A bioactive synthetic membrane improves bone healing in a preclinical nonunion model.** *Injury*
  DeBaun, M. R., Salazar, B. P., Bai, Y., Gardner, M. J., Yang, Y. P., Stanford iTEAM group, Pan, C., Stahl, A. M., Moeinzadeh, S., Kim, S., Lui, E., Kim, C., Lin, S., et al
  1800
- **Effect on Osteogenic Differentiation of Genetically Modified IL4 or PDGF-BB Over-Expressing and IL4-PDGF-BB Co-Over-Expressing Bone Marrow-Derived Mesenchymal Stromal Cells In Vitro.** *Bioengineering (Basel, Switzerland)*
  Tsubosaka, M., Maruyama, M., Huang, E. E., Zhang, N., Utsunomiya, T., Gao, Q., Shen, H., Li, X., Kushioka, J., Hirata, H., Yao, Z., Yang, Y. P., Goodman, et al
  2021; 8 (11)
- **Applying Deep Learning to Quantify Empty Lacunae in Histologic Sections of Osteonecrosis of the Femoral Head.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
  Lui, E., Maruyama, M., Guzman, R. A., Moeinzadeh, S., Pan, C., Pius, A. K., Quig, M. S., Wong, L. E., Goodman, S. B., Yang, Y. P.
  2021
- **The effect of genetically modified platelet-derived growth factor-BB over-expressing mesenchymal stromal cells during core decompression for steroid-associated osteonecrosis of the femoral head in rabbits.** *Stem cell research & therapy*
  Guzman, R. A., Maruyama, M., Moeinzadeh, S., Lui, E., Zhang, N., Storaci, H. W., Tam, K., Huang, E. E., Utsunomiya, T., Rhee, C., Gao, Q., Yao, Z., Yang, et al
  2021; 12 (1): 503
- **The role of MicroRNAs in tendon injury, repair, and related tissue engineering.** *Biomaterials*
  Liu, Q., Zhu, Y., Zhu, W., Zhang, G., Yang, Y. P., Zhao, C.
  2021; 277: 121083
- **Effect of Zinc Oxide Nanoparticle Addition to Polycaprolactone Periodontal Membranes on Antibacterial Activity and Cell Viability.** *Journal of nanoscience and nanotechnology*

Seo, N., Park, C., Stahl, A. M., Cho, H., Park, S., Yim, S., Yun, K., Ji, M., Kim, H., Yang, Y. P., Lim, H.
2021; 21 (7): 3683–88

- **The efficacy of lapine preconditioned or genetically modified IL4 over-expressing bone marrow-derived mesenchymal stromal cells in corticosteroid-associated osteonecrosis of the femoral head in rabbits.** *Biomaterials*
  Maruyama, M., Moeinzadeh, S., Guzman, R. A., Zhang, N., Storaci, H. W., Utsunomiya, T., Lui, E., Huang, E. E., Rhee, C., Gao, Q., Yao, Z., Takagi, M., Yang, et al
  2021; 275: 120972

- **Three-Dimensional Zirconia-Based Scaffolds for Load-Bearing Bone-Regeneration Applications: Prospects and Challenges** *MATERIALS*
  Sakthiabirami, K., Soundharrajan, V., Kang, J., Yang, Y., Park, S.
  2021; 14 (12)

- **Effect of porosity of a functionally-graded scaffold for the treatment of corticosteroid-associated osteonecrosis of the femoral head in rabbits.** *Journal of orthopaedic translation*
  Maruyama, M., Pan, C., Moeinzadeh, S., Storaci, H. W., Guzman, R. A., Lui, E., Ueno, M., Utsunomiya, T., Zhang, N., Rhee, C., Yao, Z., Takagi, M., Goodman, et al
  2021; 28: 90–99

- **Combining a vascular bundle and 3D printed scaffold with BMP-2 improves bone repair and angiogenesis.** *Tissue engineering. Part A*
  Kawai, T., Pan, C., Okuzu, Y., Shimizu, T., Stahl, A., Matsuda, S., Maloney, W., Yang, Y. P.
  2021

- **High-resolution radioluminescence microscopy of FDG uptake in an engineered 3D tumor-stoma model.** *European journal of nuclear medicine and molecular imaging*
  Khan, S., Kim, S., Yang, Y. P., Pratx, G.
  2021

- **Investigation of a Prevascularized Bone Graft for Large Defects in the Ovine Tibia.** *Tissue engineering. Part A*
  Yang, Y. P., Gadomski, B., Bruyas, A., Easley, J. T., Labus, K., Brad, N., Palmer, R., Stewart, H., McGilvray, K., Puttlitz, C., Regan, D., Stahl, A., Lui, et al
  2021

- **Hybrid porous zirconia scaffolds fabricated using additive manufacturing for bone tissue engineering applications.** *Materials science & engineering. C, Materials for biological applications*
  Sakthiabirami, K., Kang, J., Jang, J., Soundharrajan, V., Lim, H., Yun, K., Park, C., Lee, B., Yang, Y. P., Park, S.
  2021; 123: 111950

- **Osteoinductive 3D printed scaffold healed 5cm segmental bone defects in the ovine metatarsus.** *Scientific reports*
  Yang, Y. P., Labus, K. M., Gadomski, B. C., Bruyas, A., Easley, J., Nelson, B., Palmer, R. H., McGilvray, K., Regan, D., Puttlitz, C. M., Stahl, A., Lui, E., Li, et al
  2021; 11 (1): 6704

- **Combinatorial mechanical gradation and growth factor biopatterning strategy for spatially controlled bone-tendon-like cell differentiation and tissue formation** *NPG ASIA MATERIALS*
  Wang, D., Ker, D., Ng, K., Li, K., Gharaibeh, B., Safran, M., Cheung, E., Campbell, P., Weiss, L., Yang, Y.
  2021; 13 (1)

- **In-situ stable injectable collagen-based hydrogels for cell and growth factor delivery.** *Materialia*
  Moeinzadeh, S., Park, Y., Lin, S., Yang, Y. P.
  2021; 15

- **Management of Morbidity and Mortality in a New Zealand White Rabbit Model of Steroid-Induced Osteonecrosis of the Femoral Head** *COMPARATIVE MEDICINE*
  Casey, K. M., Gore, F., Vilches-Moure, J. G., Maruyama, M., Goodman, S. B., Yang, Y., Baker, S. W.
  2021; 71 (1): 86–98

- **Regenerative Approaches for the Treatment of Large Bone Defects.** *Tissue engineering. Part B, Reviews*
  Stahl, A., Yang, Y. P.
  2020

- **The effects of tubular structure on biomaterial aided bone regeneration in distraction osteogenesis** *JOURNAL OF ORTHOPAEDIC TRANSLATION*
  Pan, Q., Li, Y., Xu, J., Kang, Y., Li, Y., Wang, B., Yang, Y., Lin, S., Li, G.
  2020; 25: 80–86

- **Development of PLGA-PEG-COOH and gelatin-based microparticles dual delivery system and E-beam sterilization effects for controlled release of BMP-2 and IGF-1.** *Particle & particle systems characterization : measurement and description of particle properties and behavior in powders and other disperse systems*
  Bai, Y., Moeinzadeh, S., Kim, S., Park, Y., Lui, E., Tan, H., Zhao, W., Zhou, X., Yang, Y. P.
  2020; 37 (10)

- **Development of a Dual Hydrogel Model System for Vascularization.** *Macromolecular bioscience*
  Kim, S., Pan, C., Yang, Y. P.
  2020: e2000204

- **The Influence of Electron Beam Sterilization on In Vivo Degradation of beta-TCP/PCL of Different Composite Ratios for Bone Tissue Engineering.** *Micromachines*
  Kang, J., Kaneda, J., Jang, J., Sakthiabirami, K., Lui, E., Kim, C., Wang, A., Park, S., Yang, Y. P.
  2020; 11 (3)

- **Acoustic Patterning of Growth Factor for 3D Tissue Engineering.** *Tissue engineering. Part A*
  Shanjani, Y., Siebert, S. M., Ker, D. F., Mercado-Pagan, A., Yang, Y. P.
  2020

- **The efficacy of core decompression for steroidassociated osteonecrosisof the femoral head in rabbits.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
  Maruyama, M. n., Lin, T. n., Kaminow, N. I., Thio, T. n., Storaci, H. W., Pan, C. C., Yao, Z. n., Takagi, M. n., Goodman, S. B., Yang, Y. P.
  2020

- **Administration of allogeneic mesenchymal stem cells in lengthening phase accelerates early bone consolidation in rat distraction osteogenesis model.** *Stem cell research & therapy*
  Yang, Y. n., Pan, Q. n., Zou, K. n., Wang, H. n., Zhang, X. n., Yang, Z. n., Lee, W. Y., Wei, B. n., Gu, W. n., Yang, Y. P., Lin, S. n., Li, G. n.
  2020; 11 (1): 129

- **Cell-Based and Scaffold-Based Therapies for Joint Preservation in Early-Stage Osteonecrosis of the Femoral Head: A Review of Basic Research.** *JBJS reviews*
  Maruyama, M., Lin, T., Pan, C., Moeinzadeh, S., Takagi, M., Yang, Y. P., Goodman, S. B.
  2019

- **Ruminants: Evolutionary past and future impact.** *Science (New York, N.Y.)*
  Ker, D. F., Yang, Y. P.
  2019; 364 (6446): 1130–31

- **A simple layer-stacking technique to generate biomolecular and mechanical gradients in photocrosslinkable hydrogels.** *Biofabrication*
  Ko, H., Suthiwanich, K., Mary, H., Zanganeh, S., Hu, S., Ahadian, S., Yang, Y. P., Choi, G., Fetah, K., Niu, Y., Mao, J., Khademhosseini, A.
  2019

- **Effect of Plasma Treatment and Its Post Process Duration on Shear Bonding Strength and Antibacterial Effect of Dental Zirconia.** *Materials (Basel, Switzerland)*
  Park, C., Park, S., Yun, K., Ji, M., Kim, S., Yang, Y. P., Lim, H.
  2018; 11 (11)

- **Effect of Plasma Treatment and Its Post Process Duration on Shear Bonding Strength and Antibacterial Effect of Dental Zirconia** *MATERIALS*
  Park, C., Park, S., Yun, K., Ji, M., Kim, S., Yang, Y., Lim, H.
  2018; 11 (11)

- **Identifying deer antler uhrf1 proliferation and s100a10 mineralization genes using comparative RNA-seq.** *Stem cell research & therapy*
  Ker, D. F., Wang, D., Sharma, R., Zhang, B., Passarelli, B., Neff, N., Li, C., Maloney, W., Quake, S., Yang, Y. P.
  2018; 9 (1): 292

- **Effect of Electron Beam Sterilization on Three-Dimensional-Printed Polycaprolactone/Beta-Tricalcium Phosphate Scaffolds for Bone Tissue Engineering** *TISSUE ENGINEERING PART A*
  Bruyas, A., Moeinzadeh, S., Kim, S., Lowenberg, D. W., Yang, Y.
  2019; 25 (3-4): 248–56

- **The effects of a functionally-graded scaffold and bone marrow-derived mononuclear cells on steroid-induced femoral head osteonecrosis.** *Biomaterials*
  Maruyama, M., Nabeshima, A., Pan, C., Behn, A. W., Thio, T., Lin, T., Pajarinen, J., Kawai, T., Takagi, M., Goodman, S. B., Yang, Y. P.
  2018; 187: 39–46

- **Tunable Elastomers with an Antithrombotic Component for Cardiovascular Applications** *ADVANCED HEALTHCARE MATERIALS*
  Stahl, A. M., Yang, Y.
  2018; 7 (16)

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