



Sangbae Park, Ph.D.

CURRICULUM VITAE

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Seoul National University

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EDUCATION AND EMPLOYMENT

- 3/2024 – Present **Seoul National University**
Assistant Professor in Department of Biosystems Engineering
- 3/2023 – 2/2024 **Chonnam National University**
Research Professor in Department of Convergence Biosystems Engineering
(Post-doc Advisor: Prof. Jangho Kim)
- 3/2023 – 2/2024 **NANOBIOSYSTEM Co., Ltd**
A Laboratory Chief in Institute of Nano-Stem Cells Therapeutics
- 9/2023 – 2/2024 **Seoul National University**
Part-time Instructor
- 3/2022 – 2/2023 **Seoul National University**
Senior Researcher in Research Institute of Agriculture and Life Sciences
- 3/2022 – 8/2022 **Seoul National University**
Part-time Instructor
- 3/2016 – 2/2022 **Seoul National University**
Dissertation: Development of a Biomimetic Platform for Osseointegration of
Periodontal Ligament-like Tissues on Bioengineered Implants
Ph.D. in Biosystems Engineering (Advisor: Prof. Jong Hoon Chung)
- 3/2012 – 2/2016 **Seoul National University**
B.S. in Department of Biosystems & Biomaterials Science and Engineering
(Advisor: Prof. Jong Hoon Chung)

RESEARCH INTEREST

Bioprocessing of agricultural byproducts: Bioprocessing of agricultural byproducts (animal bone, chitosan), Nano-/micro ceramic particle fabrication

Biological and biosystems engineering: Biomaterials, Cultured meat development, Cell and tissue engineering

Micro-/Nano- fabrication technology: Micro-/Nano- patterning, Electrospinning, 3D printing technology, Bioprinting, Microfluidics, Organ-on-a-chip

HONORS AND AWARDS

- 2023 **Best Presentation Award**, Korea Biosystems Engineering Spring Conference
- 2022 **Outstanding Academic Book Award**, Publication Industry Promotion Agency of Korea

- 2022 **Outstanding Poster Presentation Award**, The 32nd Korean Chitin-Chitosan Society Regular Plenary Meeting
- 2020 **Best Presentation Award**, Korea Biosystems Engineering Fall Conference
- 2019 **Best Presentation Award**, Korea Biosystems Engineering Fall Conference
- 2019 **Best Presentation Award**, Korea Biosystems Engineering Spring Conference
- 2019 **Best Presentation Award**, Korea Biosystems Engineering Spring Conference
- 2018 **Best Presentation Award**, Korea Biosystems Engineering Fall Conference
- 2018 **Best Presentation Award**, In 9th International Symposium on Machinery and Mechatronics for Agricultural and Biosystems Engineering (ISMAB 2018)

TEACHING EXPERIENCES

Biomechanics, Part-time Instructor, 2023, Fall, SNU

Heat Transfer, Part-time Instructor, 2022, Spring, SNU

Biomechanics, Teaching Assistant. 2016-2022, Fall, SNU

Bio-Thermodynamics, Teaching Assistant, 2016-2022, Fall, SNU

PUBLICATIONS

A. Book Chapters

1. G. Kandhola, C. Chivers, JW. Lim, **S. Park**, JE Kim, JH. Chung, JW. Kim. Chapter 18. Carbon-based Nanomaterials. **Bioengineering: Biological Engineering Approach in Biosystems**. Munundang 2020.

B. Journal Publications (Main Author)

1. **S. Park**[‡], J. Lee[‡], JJ. Kim, M. Ji, E. Cho, HB. Sim, YT. Chang, JH. Chung, MJ. Paik, J. Kim, H. Seonwoo. Osseointegrative and Immunomodulative 3D-Printing Ti6Al4V-based Implants Embedded with Biogenic Hydroxyapatite. **Materials & Design**. 2024:240:112822. [SCIE, IF: 8.4]
2. Y. Gwon[‡], **S. Park**[‡], W. Kim, S. Park, H. Sharma, HE Jeong, HJ. Kong, J. Kim. Graphene Hybrid Tough Hydrogels with Nanostructures for Tissue Regeneration. **Nano Letters**. 2024. [SCIE, IF: 10.8] (# equally contributed, 1st author)
3. **S. Park**[‡], Y. Hong[‡], S. Park, W. Kim, Y. Gwon, H. Sharma. KJ. Jang, J. Kim. Engineering Considerations on Large-Scale Cultured Meat Production. **Tissue Engineering: Part. B**. 2024. [SCIE, IF: 6.4]
4. **S. Park**[‡], Y. Hong[‡], S. Park, W. Kim, Y. Gwon, KJ. Jang, J. Kim. Designing Highly Aligned Cultured Meat with Nanopatterns-Assisted Bio-Printed Fat Scaffolds. **Journal of Biosystems Engineering**. 2023:48(4):503-511.
5. KJ. Jang[‡], **S. Park**[‡], J. Lee, Y. Hong, H. Seonwoo, KT. Kim, J. Kim, JH. Chung. Size-Wise Effect of Agricultural By-Product-Derived Calcium Phosphate Composites on Stem Cell Osteogenesis. **Journal of Biosystems Engineering**. 2023:48:392-401 (# equally contributed, 1st author)
6. J. Lee[‡], **S. Park**[‡], J. Kim, S. Lee, HY. Kweon, YY. Jo, J. Kim, JH. Chung, H. Seonwoo. Development of Silk Fibroin-Based Thermosensitive Bioinks for 3D Bioprinting. **Polymers**. 2023:15(17):3567. [SCIE, IF: 5.0] (# equally contributed, 1st author)
7. **S. Park**[‡], Y. Gwon[‡], S. A. Khan, KJ. Jang, J. Kim. Engineering considerations of iPSC-based personalized

- medicine. **Biomaterials Research**. 2023;27(1):67. [SCIE, IF: 11.3, JCR: 4.7%]
8. J. Han[†], **S. Park[†]**, JE. Kim, B. Park, Y. Hong, JW. Lim, S. Jeong, H. Son, HB. Kim, H. Seonwoo, KJ. Jang, JH. Chung. Development of a Scaffold-on-a-Chip Platform to Evaluate Cell Infiltration and Osteogenesis on the 3D-Printed Scaffold for Bone Regeneration. **ACS Biomaterials Science & Engineering**. 2023;9(2): 968-977. [SCIE, IF: 5.8] (# equally contributed, 1st author)
 9. H. Seonwoo[†], HW. Choung[†], **S. Park[†]**, KS. Choi, KJ. Jang, J. Kim, KT. Lim, YJ. Kim, P. Garg, S. Pandey, J. Lee, JC. Park, YH. Choung, PH. Choung, SY. Kim, JH. Chung. Reduced graphene oxide-incorporated calcium phosphate cements with pulsed electromagnetic fields for bone regeneration. **RSC Advances** 2022;12(9):5557-5570. [SCIE, IF: 4.036] (# equally contributed, 1st author)
 10. KJ. Jang[†], WS. Lee[†], **S. Park[†]**, J. Han, JE. Kim, BM. Kim, JH. Chung. Sulfur (VI) Fluoride Exchange (SuFEx)-Mediated Synthesis of the Chitosan-PEG Conjugate and Its Supramolecular Hydrogels for Protein Delivery. **Nanomaterials** 2021;11(2):318. [SCIE, IF: 5.719] (# equally contributed, 1st author)
 11. JE. Kim[†], **S. Park[†]**, WS. Lee[†], J. Han, JW. Lim, S. Jeong, M. Lee, WY. Yang, H. Seonwoo, BM. Kim, YH. Choung, KJ. Jang, JH. Chung. Enhanced Osteogenesis of Dental Pulp Stem Cells In Vitro Induced by Chitosan-PEG-Incorporated Calcium Phosphate Cement. **Polymers** 2021;13(14):2252. [SCIE, IF: 4.967] (# equally contributed, 1st author)
 12. J. Park[†], **S. Park[†]**, JE. Kim[†], KJ. Jang, H. Seonwoo, JH. Chung. Enhanced osteogenic differentiation of periodontal ligament stem cells using a graphene oxide-coated poly (ϵ -caprolactone) scaffold. **Polymers** 2021;13(5):797. [SCIE, IF: 4.967] (# equally contributed, 1st author)
 13. **S. Park[†]**, JE. Kim[†], J. Han, S. Jeong, JW. Lim, M. Lee, H. Son, HB. Kim, YH. Choung, H. Seonwoo, JH. Chung, KJ. Jang. 3D-printed poly (ϵ -caprolactone)/hydroxyapatite scaffolds modified with alkaline hydrolysis enhance osteogenesis in vitro. **Polymers** 2021;13(2):257. [SCIE, IF: 4.967]

C. Journal Publications (Co-Author)

14. SH. Kim, SH. Bae, **S. Park**, H. Seonwoo, SE. Shin. Friction and Wear Behavior of Selective Laser Melted Ti6Al4V-Equine Bone Nanocomposites. *Korean Journal of Metals and Materials*. 2024
15. S. Park, H. Sharma, M. Safdar, J. Lee, W. Kim, **S. Park**, HE. Jeong, J. Kim. Micro/nanoengineered agricultural by-products for biomedical and environmental applications. *Environmental Research*. 2024. [SCIE, IF: 8.3]
16. E. Cho, JE. Kim, J. Lee, **S. Park**, S. Lee, JH. Chung, J. Kim, H. Seonwoo. Development of 3D Printable Calcium Phosphate Cement Scaffolds with Cockle Shell Powders. **Materials**. 2023. [SCIE, IF: 3.4]
17. HB. Kim, MH Kang, KY Baik, JE Kim, **S. Park**, PH Choung, JH Chung. Integration of blue light with near-infrared irradiation accelerates the osteogenic differentiation of human dental pulp stem cells. **Journal of Photochemistry and Photobiology B: Biology** 2023;112752. [SCIE, IF: 5.4]
18. S. Park, YJ. Kim, H. Sharma, D. Kim, Y. Gwon, W. Kim, **S. Park**, CW. Ha, YH. Choung, J. Kim. Graphene Hybrid Inner Ear Organoids with Enhanced Maturity. **Nano Letters** 2023;23(12):5573-5580. [SCIE, IF: 11.189, JCR: 9%]
19. S. Pandey, MC. Lee, JW. Lim, S. Park, YH. Choung, JE Kim, P. Garg, JH. Chung. SMO-CRISPR-mediated apoptosis in CD133-targeted cancer stem cells and tumor growth inhibition. **Journal of Controlled Release** 2023;357:94-108. [SCIE, IF: 11.467, JCR: 4%]
20. H. Son, JW. Lim, **S. Park**, B. Park, J. Han, HB. Kim, MC. Lee, KJ. Jang, G. Kim, JH. Chung. A Machine Learning

- Approach for the Classification of Falls and Activities of Daily Living in Agricultural Workers. **IEEE Access** 2022;10:77418-77431. [SCIE, IF: 3.476]
21. S. Pandey, M. Lee, JW. Lim, YH. Choung, KJ. Jang, **S. Park**, JE. Kim, JH. Chung, P. Garg. SHMT1 siRNA-Loaded hyperosmotic nanochains for blood-brain/tumor barrier post-transmigration therapy. **Biomaterials** 2022;281:121359. [SCIE, IF: 15.304, JCR: 3%]
 22. M. Lee, H. Seonwoo, KJ. Jang, S. Pandey, JW. Lim, **S. Park**, JE. Kim, YH. Choung, P. Garg, JH. Chung. Development of novel gene carrier using modified nano hydroxyapatite derived from equine bone for osteogenic differentiation of dental pulp stem cells. **Bioactive Materials** 2021;6(9):2742-2751. [SCIE, IF: 16.874]
 23. W. Choi, KY. Baik, S. Jeong, **S. Park**, JE. Kim, HB. Kim, JH. Chung. Photobiomodulation as an antioxidant substitute in post-thawing trauma of human stem cells from the apical papilla. **Scientific Reports** 2021;11(1):1-14. [SCIE, IF: 4.997]
 24. KJ. Jang, H. Seonwoo, M. Yang, **S. Park**, KT. Lim, J. Kim, PH. Choung, JH. Chung. Development and characterization of waste equine bone-derived calcium phosphate cements with human alveolar bone-derived mesenchymal stem cells. **Connect Tissue Res** 2021;62(2):164-175. [SCIE, IF: 3.342]
 25. S. Jeong, HJ. Jeon, KJ. Jang, **S. Park**, HS. Choi, JH. Chung. Injectable Thermosensitive Chitosan Solution with β -Glycerophosphate as an Optimal Submucosal Fluid Cushion for Endoscopic Submucosal Dissection. **Polymers** 2021;13(11):1696. [SCIE, IF: 4.967]
 26. M. Lee, S. Pandey, JW. Lim, **S. Park**, JE. Kim, H. Son, J. Han, H. Seonwoo, P. Garg, JH. Chung. Induction of Apoptosis of Cancer Cells Using the Cisplatin Delivery Based Electrospray (CDES) System. **Applied Sciences** 2021;11(7):3203. [SCIE, IF: 2.838]
 27. S. Yeom, M. Lee, S. Pandey, JW. Lim, **S. Park**, JE. Kim, KJ. Jang, H. Seonwoo, P. Garg, JH. Chung. Induction of Stem Cell Like Cells from Mouse Embryonic Fibroblast by Short-Term Shear Stress and Vitamin C. **Applied Sciences** 2021;11(4):1941. [SCIE, IF: 2.838]
 28. JW. Lim, KJ. Jang, H. Son, **S. Park**, JE. Kim, HB. Kim, H. Seonwoo, YH. Choung, M. Lee, JH. Chung. Aligned nanofiber-guided bone regeneration barrier incorporated with equine bone-derived hydroxyapatite for alveolar bone regeneration. **Polymers** 2021;13(1):60. [SCIE, IF: 4.967]
 29. KJ. Jang, S. Kim, S. Park, W. Kim, Y. Gwon, SH. Park, KT. Lim, H. Seonwoo, J. Kim. Lithographically-fabricated HA-incorporated PCL nanopatterned patch for tissue engineering. **Applied Sciences** 2020; 10(7): 2398. [SCIE, IF: 2.679]
 30. J. Ku, H. Seonwoo, **S. Park**, KJ. Jang, J. Lee, M. Lee, JW. Lim, J. Kim, JH. Chung. Cell-laden thermosensitive chitosan hydrogel bioinks for 3d bioprinting applications. **Applied Sciences** 2020; 10(7):2455. [SCIE, IF: 2.679]
 31. H. Seonwoo, B. Shin, KJ. Jang, M. Lee, OS. Choo, **S. Park**, YC. Kim, MJ. Choi, J. Kim, P. Garg, JH. Jang, YH. Choung, JH. Chung. Epidermal Growth Factor-Releasing Radially Aligned Electrospun Nanofibrous Patches for the Regeneration of Chronic Tympanic Membrane Perforations. **Advanced Healthcare Materials** 2019;8(2):1801160. [SCIE, IF: 7.367, JCR: 8%]
 32. H. Seonwoo, KJ. Jang, D. Lee, **S. Park**, M. Lee, S. Park, KT. Lim, J. Kim, JH. Chung. Neurogenic Differentiation of Human Dental Pulp Stem Cells on Graphene-Polycaprolactone Hybrid Nanofibers. **Nanomaterials** 2018;8(7): 554. [SCIE, IF: 4.034]
 33. M. Lee, H. Seonwoo, P. Garg, KJ. Jang, S. Pandey, **S. Park**, HB. Kim, J. Lim, YH. Choung, JH. Chung.

- Chitosan/PEI patch releasing EGF and the EGFR gene for the regeneration of the tympanic membrane after perforation. **Biomaterials Science** 2018:3(2):364-371. [SCIE, IF: 5.251]
34. MC. Lee, H. Seonwoo, P. Garg, KJ. Jang, S. Pandey, HB. Kim, **S. Park**, JB. Ku, J. Kim, KT. Lim, JH. Chung. Development of a bio-electrospray system for cell and non-viral gene delivery. **RSC Advances** 2018:8:6452-6459. [SCIE, IF: 3.049]
35. HB. Kim, YR. Seo, KJ. Jang, **S. Park**, H. Seonwoo, JW. Kim, J. Kim, KT. Lim. Mechanical and biological characteristics of reinforced 3D printing filament composites with agricultural by-product. **Food Engineering Progress** 2017:21(3):233-241.

[In preparation]

36. **S. Park**[†], JE. Kim[‡], J. Han, Y. Gwon, M. Lee, JW. Lim, S. Jeong, J. Lee, P. Garg, S. Pandey, J. Kim, H. Seonwoo, KJ. Jang, JH. Chung. Bioimplant-on-a-Chip for Investigating Osseointegration of Periodontal Ligament-like Tissues on Bioengineered Implants. [In preparation]

PATENT

1. **S. Park**. Scaffold for regenerating periodontal tissue containing horse bone-derived nanoceramics and PCL and its manufacturing method. **Korean Patent** 2021: 1023168790000

INVITED TALKS AND SEMINARS

1. **S. Park**. Bioengineering Applications of Equine Bone-derived Biomaterials. 1st Symposium on Bioprocessing, Korean Society for Agricultural Machinery (KSAM), February 16, 2023. [Invited]
2. **S. Park**. 3D-Printed Titanium/Biogenic Hydroxyapatite Composite Implants for Enhanced Bone Regeneration, IEEE Nano, July 3, 2023. [Invited]

RESEARCH GRANTS

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| 2022-2025 | National Research Foundation of Korea (PI) [\$180,000] |
| 2024-2026 | Seoul National University (PI) [\$76,000] |