
BIOGRAPHICAL SKETCH (last updated; Feb./08/2024)

NAME Lim, Ki-Taek ktlim@kangwon.ac.kr; ktlim74@gmail.com	POSITION TITLE Full Professor Dept. of Biosystems Engineering Kangwon National University Biorobotics group (www.bioroboticseng.com) Founder, Biomechagen, Co., Ltd.
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EDUCATION			
INSTITUTION AND LOCATION	DEGREE (in Engr.)	MM/YY	FIELD OF STUDY
University of Arkansas Institute for Nanoscience and Engineering	Postdoc	02/15	Bio/Nanotechnologies
Seoul National University School of Dentistry	Postdoc	02/14	Tooth Tissue Engineering
Seoul National University	Ph.D.	02/13	Major in Biosystems Engineering
Sungkyunkwan University	M.S.	02/99	Major in Biomechatronics Engineering
Konkuk University	B.S.	02/97	Major in Bio-industrial Machinery Engineering

A. Personal Statement

I have studied mechanical engineering, mechatronics, and biological engineering, ultimately aiming for bio-convergence of research findings into biosystems science & engineering. Based on bio-convergence toolkits, I have published +200 research articles related to tissue engineering and regenerative medicine, stem cells, and bio/nanotechnologies. The research roadmap is developing a bio-nanorobotic system for future applications with the background of novel bioreactors, non-invasive measurement systems, stem cell culture engineering, and bio/nano-technologies. The proposed research aims to elucidate novel techniques in applications of next-tissue regeneration based on emerging convergence biotechnologies.

B. Positions and Honors

Positions and Employment

2020-	Associate Professor, Department of Biosystems Engineering, Kangwon National University
2015-	Assistant Professor, Department of Biosystems Engineering, Kangwon National University
2015-	Visiting Scholar, Research Institute for Agriculture and Life Sciences, Seoul National University
2014-2015	Postdoctoral Fellow, Institute for Nanoscience and Engineering, University of Arkansas, Fayetteville, USA
2013-2014	Senior Researcher, Tooth-Bioengineering Group, Dental Research Institute, Seoul National University

Other Experience and Professional Memberships

2023-	Elected by Stanford University, representing the top 2% of the most-cited scientists with a single-year impact in (1) Biomedical Engineering, (2) Nanoscience & Nanotechnology, (3) Engineering disciplines
2022-	Special Editor, International Journal of Bioprinting, IF 7.422
2022-	Special Editor, Gels, IF 4.702 MDPI
2022-	Special Editor, Micromachine, IF 3.702 MDPI
2020-	Reviewer Board, Nanomaterials, IF 4.32 MDPI
2020--	Special Editor, Micromachines, IF 2.79 MDPI
2020-	Committee Member, Korea Biomaterials Society
2020-	Committee Member, Korea Tissue Engineering & Regenerative Medicine Society
2018-	Committee Member, Korea Organoid Society
2018-	Committee Member, International Conference on Bioresources, Energy, Environment, and Materials Technology

2017- Committee Member, Institutional Animal Care and Use Committee, KNU.
2017- Editorial Board, Advances in Biomaterials Research (ABR)
2015- Committee Member, The delegation of the 12th US-Korea Nano Forum
2015- Committee Member, Korea National Industrial Convergence Center
2015- Committee Member, Korea Institute of Planning & Evaluation for Technology in Food, Agriculture, Forestry & Fisheries
2015-2016 Editorial Board, Journal of Biosystems Engineering
2015-2016 Technical Program Committee Member, IEEE NANOMED
2015- Associate Editor, Engineering in Agriculture, Environment and Food Journal (Elsevier)
2010-2014 Instructor, Seoul National University; Konkuk University
2006-2008 Teaching Assistant, Seoul National University

C. Selected Peer-reviewed Publications (Selected from 160 peer-reviewed publications)

Most relevant to the current publications (10)

1. Lim, KT., Electrically stimulated 3D bioprinting of gelatin-poly pyrrole hydrogel with dynamic semi-IPN network promotes bone regeneration through activating NOTCH/MAPK/SMAD signaling and immunopolarization. **Biomaterials** 2023 IF 15.723 JCR 3%
2. Lim, KT., Transcriptomic changes towards osteogenic differentiation of mesenchymal stem cells on 3D printed GelMA/CNC hydrogel under pulsatile pressure environment. **Advanced Healthcare Materials** 2023 IF 11.723 JCR 10%
3. Lim, KT., Nanocellulose-assisted 3D-printable, transparent, bio-adhesive, conductive, and biocompatible hydrogels as sensors and moist electric generators. **Carbohydrate Polymers** 2023 IF 10.723 JCR 3%
4. Lim, KT., Cellulose nanocrystals vs. cellulose nanosphere: A comparative study on cytotoxicity and macrophage polarization potential. **Carbohydrate Polymers** 2023 IF 10.723 JCR 3%
5. Lim, KT., Trackable and highly fluorescent nanocellulose-based printable bio-resins for image-guided tissue regeneration. **Carbohydrate Polymers** 2023 IF 10.723 JCR 3%
6. Lim, KT., Magnetic field-assisted aligned patterning in an alginate-silk fibroin/nanocellulose composite for guided wound healing. **Carbohydrate Polymers** 2022 IF 10.723 JCR 3%
7. Lim, KT., 3D-printable chitosan/silk fibroin/cellulose nanoparticle scaffolds for bone regeneration via M2 macrophage polarization. **Carbohydrate Polymers** 2022 IF 10.723 JCR 3%
8. Lim, KT., Functionalized chitosan/spherical nanocellulose-based injectable hydrogels with superior antibacterial efficiency for improved wound healing. **Carbohydrate Polymers** 2022 IF 10.723 JCR 3%
9. Lim, KT., Polyphenolic carbon quantum dots with intrinsic ROS amplification for melanoma-specific chemodynamic therapy **ACS Applied Materials & Interfaces** 2023 IF 10.383
10. Lim, KT., Bioengineered lab-grown meat-like constructs through 3D printing of antioxidative protein hydrolysates **ACS Applied Materials & Interfaces** 2022 IF 10.383

Publications

1. Aayushi Randhawa; Sayan Deb Dutta; Keya Ganguly; Tejal V. Patil; [Ki-Taek Lim*](#) [Manufacturing 3D biomimetic tissue: a strategy involving the integration of electrospun nanofibers with a 3D printed framework for enhanced tissue regeneration](#) *Small* 2024
IF 13.30 JCR 5% | JCI 5% <https://doi.org/10.1002/smll.2023092694>
2. Sayan Deb Dutta; Keya Ganguly; Tejal V. Patil; Aayushi Randhawa; Hojin Kim; Rumi Acharya; [Ki-Taek Lim*](#) [3D printable hydrogel bioelectronic interfaces for healthcare monitoring and diagnosis: materials, design strategies, and applications](#) *Advanced Materials Technologies* 2024
IF 06.80 JCR 25% | JCI 25% <https://doi.org/10.1002/admt.202301874>
3. Hyeonseo Park; Tejal V. Patil; Sayan Deb Dutta; Jieun Lee; Keya Ganguly; Aayushi Randhawa; Hojin Kim; [Ki-Taek Lim*](#) [Extracellular matrix-bioinspired anisotropic topographical cues of electrospun nanofibers: a strategy of wound healing through macrophage polarization](#) *Advanced Healthcare Materials* 2024
IF 10.00 JCR 10% | JCI 10% <https://doi.org/10.1002/adhm.202304114>
4. Jieun Lee; Sayan Deb Dutta; Rumi Acharya; Hyeonseo Park; Hojin Kim; Aayushi Randhawa; Tejal V. Patil; Keya Ganguly; Rachmi Luthfikasari; [Ki-Taek Lim*](#) [Stimuli-responsive 3D printable conductive hydrogel: a step towards regulating macrophage polarization and wound healing](#) *Advanced Healthcare Materials* 2302394 2023 November
IF 10.00 JCR 8% | JCI 10% <https://doi.org/10.1002/adhm.202302394>
5. Sayan Deb Dutta; Md Moniruzzaman; Jin Hexiu; Sourav Sarkar; Keya Ganguly; Dinesh K. Patel; Jagannath Mondal; Yong-Kyu Lee; Rumi Acharya; Jongsung Kim*; [Ki-Taek Lim*](#) [Polyphenolic carbon quantum dots with intrinsic ROS amplification for melanoma-specific chemodynamic therapy](#) *ACS Applied Materials & Interfaces* 2023 15(45): 52083–52099 October
IF 9.50 JCR 15% | JCI 13% <https://doi.org/10.1021/acsmi.3c07547>
6. Sayan Deb Dutta; Tejal V Patil; Keya Ganguly; Rumi Acharya; Md Moniruzzaman; [Ki-Taek Lim*](#) [Trackable and highly fluorescent nanocellulose-based printable bio-resins for image-guided tissue regeneration](#) *Carbohydrate Polymers* 2023 Volume 320, 15 November 121232 IF 11.20 | JCR 3% | JCI 1% <https://doi.org/10.1016/j.carbpol.2023.121232>
7. Sayan Deb Dutta; Tejal V Patil; Keya Ganguly; Aayushi Randhawa; [Ki-Taek Lim*](#) [Unraveling the potential of 3D bioprinted immunomodulatory materials for regulating macrophage polarization: state-of-the-art in bone and associated tissue regeneration](#) *Bioactive Materials* Volume 28, October 2023, Pages 284-310 2023
IF 18.90 JCR 2% <https://doi.org/10.1016/j.bioactmat.2023.05.014>
8. Dinesh K. Patel; Keya Ganguly; Sayan Deb Dutta; Tejal V. Patil; [Ki-Taek Lim*](#) [Nanocellulose-assisted 3D-printable, transparent, bio-adhesive, conductive, and biocompatible hydrogels as sensors and moist electric generators](#) *Carbohydrate Polymers* 2023 Volume 315, 1 September 2023, 120963
IF 11.20 | JCR 3% | JCI 1% <https://doi.org/10.1016/j.carbpol.2023.120963>
9. Sayan Deb Dutta; Keya Ganguly; Jin Hexiu; Aayushi Randhawa; Md Moniruzzaman; [Ki-Taek Lim*](#) [A 3D-bioprinted nanoengineered hydrogel with photo-activated drug delivery for tumor apoptosis and simultaneous bone regeneration via dynamic macrophage immunomodulation](#) *Macromolecular Bioscience* 2023 23 April 2300096
IF 5.922 JCR 12% <https://doi.org/10.1002/mabi.202300096>
10. Sayan Deb Dutta; Keya Ganguly; Dinesh K. Patel; Tejal V. Patil; [Ki-Taek Lim*](#) [Electrically stimulated 3D bioprinting of gelatin-poly pyrrole hydrogel with dynamic semi-IPN network promotes bone regeneration through activating NOTCH/MAPK/SMAD signaling and immunopolarization](#) *Biomaterials* 2023 Mar;294:121999
IF 15.304 JCR 5% | JCI 1% <https://doi.org/10.1016/j.biomaterials.2023.121999>
11. Keya Ganguly; Sayan Deb Dutta; Aayushi Randhawa; Dinesh K Patel; Tejal V Patil; [Ki-Taek Lim*](#) [Transcriptomic changes towards osteogenic differentiation of mesenchymal stem cells on 3D printed GelMA/CNC hydrogel under pulsatile pressure environment](#) *Advanced Healthcare Materials* 2023 April 26; 12(11) 2202163
IF 11.092 JCR 8% <https://doi.org/10.1002/adhm.202202163> *Science News*
12. Dinesh K. Patel; Keya Ganguly; Sayan Deb Dutta; Tejal V. Patil; [Ki-Taek Lim*](#) [Cellulose nanocrystals vs. cellulose nanosphere: A comparative study on cytotoxicity and macrophage polarization potential](#) *Carbohydrate Polymers* 2023 303 1 120435
IF 10.723 JCR 3% | JCI 1% <https://doi.org/10.1016/j.carbpol.2022.120464>
13. Tejal V. Patil; Sayan Deb Dutta; Dinesh K. Patel; Keya Ganguly; [Ki-Taek Lim*](#) [Electrospinning near infra-red light-responsive unzipped CNT/PDA nanofibrous membrane for enhanced antibacterial effect and rapid drug release](#) *Applied Surface Science* 2023 612(1): 155949
IF 7.392 JCR 3% | JCI 3% <https://doi.org/10.1016/j.apsusc.2022.155949> Ranked 1 out of 21 in Materials Science, Coatings & Films
14. Dinesh K. Patel; Keya Ganguly; Sayan Deb Dutta; Tejal V. Patil; Aayushi Randhawa; [Ki-Taek Lim*](#) [Highly stretchable, adhesive, and biocompatible hydrogel platforms of tannic acid functionalized spherical nanocellulose for strain sensors](#) *International Journal of Biological Macromolecules* 2023 229 28 105-122
IF 8.025 JCR 7% | JCI 9% <https://doi.org/10.1016/j.ijbiomac.2022.12.286>

15. Aayushi Randhawa; Sayan Deb Dutta; Keya Ganguly; Dinesh K. Patel; Tejal V. Patil; [Ki-Taek Lim*](#) [Recent advances in 3D printing of photocurable polymers: types, mechanism, and tissue engineering application](#) *Macromolecular bioscience* 2023 Jan;23(1):e2200278 IF 5.859 **JCR 12%** <https://doi.org/10.1002/mabi.202200278>
16. Keya Ganguly; Mercedes Espinal; Sayan Deb Dutta; Dinesh K. Patel; Tejal V. Patil; [Ki-Taek Lim*](#) [Multifunctional 3D platforms for rapid hemostasis and wound healing: structural and functional prospects at biointerfaces](#) *International Journal of Bioprinting* 2023 9(1): 648 | IF 8.40 | [Special issue as a guest editor](#) <http://dx.doi.org/10.18063/ijb.v9i1.648>
17. Kyoung-Je Jang; Sangbae Park; Juo Lee; Yeonggeol Hong; Hoon Seonwoo; [Ki-Taek Lim](#); Jangho Kim; Jong Hoon Chung [Size-wise effect of agricultural by-product-derived calcium phosphate composites on stem cell osteogenesis](#) *Journal of Biosystems Engineering* 2023 October, Scopus indexed <https://link.springer.com/article/10.1007/s42853-023-00199-5>
18. Rumi Acharya; Sayan Deb Dutta; Tejal V. Patil; Keya Ganguly; Aayushi Randhawa; [Ki-Taek Lim*](#) [A review on electroactive polymer-metal composites: development and applications for tissue regeneration](#) *Journal of Functional Biomaterials* 2023 14(10): 523 IF 4.80 | [Invited as a viewpoint article](#) <https://doi.org/10.3390/jfb14100523>
19. Aayushi Randhawa; Sayan Deb Dutta; Keya Ganguly; Tejal V. Patil; Rachmi Luthfikasari; [Ki-Taek Lim*](#) [Understanding cell-extracellular matrix interactions for topology-guided tissue regeneration](#) *Biocell* 2023 47(4): 789-808 IF 1.20 | [Invited as a viewpoint article](#) <https://doi.org/10.32604/biocell.2023.026217>
20. Md Moniruzzaman; Sayan Deb Dutta; [Ki-Taek Lim*](#); Jongsung Kim* [Perylene-derived hydrophilic carbon dots with polychromatic emissions as superior bioimaging and NIR-responsive photothermal bactericidal agent](#) *ACS Omega* 2022 7(42) 37388–37400 IF 4.132 <https://doi.org/10.1021/acsomega.2c04130>
21. Dinesh K. Patel; Keya Ganguly; Sayan Deb Dutta; Tejal V. Patil; [Ki-Taek Lim*](#) [Multifunctional hydrogels of polyvinyl alcohol/polydopamine functionalized with carbon nanomaterials as flexible sensors](#) *Materials Today Communications* 2022 32 103906 IF 3.383 <https://doi.org/10.1016/j.mtcomm.2022.103906>
22. Rachmi Luthfikasari; Tejal V. Patil; Dinesh K. Patel; Keya Ganguly; Sayan Deb Dutta; [Ki-Taek Lim*](#) [Plant-actuated micro/nanorobotics platform: structural design, functional prospects, and biomedical applications](#) *Small* 2022 Jul;18(30):e2201417 IF 15.153 **JCR 5%** <https://doi.org/10.1002/smll.202201417>
23. Sayan Deb Dutta; Keya Ganguly; Min-Soo Cheong; Dinesh K. Patel; Tejal V. Patil; Seong-Jun Cho; [Ki-Taek Lim*](#) [Bioengineered lab-grown meat-like constructs through 3D printing of antioxidative protein hydrolysates](#) *ACS Applied Materials & Interfaces* 2022 14, 30, 34513–34526 IF 10.383 [Selected as a Supplementary Cover](#) <https://doi.org/10.1021/acsaami.2c10620>
24. Amogh Kumara; G. Keerthiga; L. Mohana; Sayan Deb Dutta; Pallavi Gupta; [Ki-Taek Lim](#); Tuhin Subhra Santra [Controlled and localized drug delivery using titania nanotubes](#) *Materials Today Communications* July 2022 103843 IF 3.662 <https://doi.org/10.1016/j.mtcomm.2022.103843>
25. Md Moniruzzaman; Sayan Deb Dutta; Jin Hexiu; Keya Ganguly; [Ki-Taek Lim*](#); Jongsung Kim* [Polyphenol-derived bioactive carbon quantum dot-incorporated multifunctional hydrogels as oxidative stress attenuator for antiaging and in vivo wound-healing applications](#) *Biomaterials Science* July 2022 Jun 28;10(13):3527-3539 IF 7.590 <https://doi.org/10.1039/d2bm00424k>
26. Seonwoo, Hoon; Choung, Han-Wool; Park, Sangbae; Choi, Kyoung Soon; Jang, Kyoung Je; Kim, Jangho; [Lim, Ki Taek](#); Kim, Yeonju; Garg, Pankaj; Pandey, Shambhavi; Lee, Juo; Park, Joo-Cheol ; Choung, Yun-Hoon; Choung, Pihl-Hoon; Kim, Soo Young; Chung, Jong Hoon [Reduced graphene oxide-incorporated calcium phosphate cements with pulsed electromagnetic fields for bone regeneration](#) *RSC Advances* 2022, 12, 5557-5570 IF 4.036 <https://doi.org/10.1039/d1ra05717k>
27. Aayushi Randhawa; Sayan Deb Dutta; Keya Ganguly; Dinesh K. Patel; Tejal V. Patil; [Ki-Taek Lim*](#) [A review of properties of nanocellulose, its synthesis, and potential in biomedical applications](#) *Applied Sciences* July 2022 12(14), 7090 IF 2.838 | [Invited as a special issue](#) <https://doi.org/10.3390/app12147090>
28. Md Moniruzzaman; Sayan Deb Duta; [Ki-Taek Lim*](#); Jongsung Kim* [Wet chemistry-based processing of tunable polychromatic carbon quantum dots for multicolor bioimaging and enhanced NIR-triggered photothermal bactericidal efficacy](#) *Applied Surface Science* Volume 597, 30 September 2022, 153630 IF 7.392 **JCR 3%** | <https://doi.org/10.1016/j.apsusc.2022.153630>
29. Dinesh K. Patel; Keya Ganguly; Jin Hexiu; Sayan Deb Dutta; Tejal V. Patil; [Ki-Taek Lim*](#) [Functionalized chitosan/spherical nanocellulose-based injectable hydrogels with superior antibacterial efficiency for improved wound healing](#) *Carbohydrate Polymers* May 2022, 284, 119202-119217 IF 10.723 **JCR 3%** <https://doi.org/10.1016/j.carbpol.2022.119202>
30. Keya Ganguly; Jin Hexiu; Sayan Deb Dutta; Dinesh K. Patel; Tejal V. Patil; [Ki-Taek Lim*](#) [Magnetic field-assisted aligned patterning in an alginate-silk fibroin/nanocellulose composite for guided wound healing](#) *Carbohydrate Polymers* July 2022 Jul 1;287:119321 IF 10.723 **JCR 3%** <https://doi.org/10.1016/j.carbpol.2022.119321> | **NANO NEWS**

31. Sayan Deb Dutta; Jin Hexiu; Jongsung Kim; Sourav Sarkar; Jagannath Mondal; Yong-Kyu Lee; Jeong Man An; Md Moniruzzaman; [Ki-Taek Lim*](#) [Two-photon excitable membrane targeting polyphenolic carbon dots for long-term imaging and pH-responsive chemotherapeutic drug delivery for synergistic tumor therapy](#) *Biomaterials Science* May 2022 10(7) 1680-1696
IF 7.590 | [Selected as a front cover](#) <https://doi.org/10.1039/D1BM01832A>
32. Dinesh K. Patel; Sayan Deb Dutta; Jin Hexiu; Keya Ganguly; [Ki-Taek Lim*](#) [3D-printable chitosan/silk fibroin/cellulose nanoparticle scaffolds for bone regeneration via M2 macrophage polarization](#) *Carbohydrate Polymers* April 2022, 281, 119077-119095
IF 10.723 [JCR 3%](#) <https://doi.org/10.1016/j.carbpol.2021.119077>
33. Tejal V. Patil; Dinesh K. Patel; Sayan Deb Dutta; Keya Ganguly; Tuhin Subhra Santra; [Ki-Taek Lim*](#) [Nanocellulose, a versatile platform: from the delivery of active molecules to tissue engineering applications](#) *Bioactive Materials* March 2022, 9, 566-589
IF 16.874 [JCR 5%](#) <https://doi.org/10.1016/j.bioactmat.2021.07.006>
34. Kavitha Illath; Srabani Kar; Pallavi Gupta; Ashwini Shinde; Syrpailyne Wankhar; Fan-Gang Tseng; [Ki-Taek Lim](#); Moeto Nagai; Tuhin Subhra Santra [A review on microfluidic nanomaterials: from synthesis to biomedical applications](#) *Biomaterials* January 2022, 280, 121247-121280
IF 15.304 [JCR 3%](#) <https://doi.org/10.1016/j.biomaterials.2021.121247>
35. [Ki-Taek Lim*](#); Tejal V. Patil; Sayan Deb Dutta; Keya Ganguly; Dinesh K. Patel [Mesenchymal stem cells, the secretome and biomaterials: regenerative medicine applications](#) *Biocell* June 2022, 46(10), 2201-2208
IF 1.110 | [Invited as a viewpoint article](#) <https://doi.org/10.32604/biocell.2022.020013>
36. Tejal V. Patil, Dinesh K. Patel, Sayan Deb Dutta, Keya Ganguly, Aayushi Randhawa and [Ki-Taek Lim*](#) [Carbon nanotubes-based hydrogels for bacterial eradication and wound dressing applications](#) *Applied Sciences*, 2021, IF 2.679 | [Invited as a feature article](#)
<https://doi.org/10.3390/app11209550>
37. [Ki-Taek Lim*](#), Dinesh K. Patel, Sayan Deb Dutt and Keya Ganguly [Fluid flow mechanical stimulation-assisted a cartridge device for osteogenic differentiation of human mesenchymal stem cells](#) *Micromachines*, 2021, 12(8), 927 IF 2.891 <https://doi.org/10.3390/mi12080927>
38. SD Dutta; T Park; K Ganguly; DK Patel; Bin J; MC Kim; [KT Lim*](#) [Evaluation of the sensing potential of stem cell-secreted proteins via a micro-chip device under electromagnetic field stimulation](#) *ACS Applied Bio Materials*, 2021 4(9) 6853-6864 August | [Journal Cover](#)
<https://doi.org/10.1021/acsbm.1c00561>
39. Tejal V. Patil, Dinesh K. Patel, Sayan Deb Dutta, Keya Ganguly and [Ki-Taek Lim*](#) [Graphene oxide-based stimuli-responsive platforms for biomedical application](#) *Molecules*, 2021, 26,0, IF 4.411 | [Invited as a feature article](#) <https://doi.org/10.3390/molecules26092797>
40. Sayan D. Dutta, Jin Bin, Keya Ganguly, Dinesh K. Patel and [Ki-Taek Lim*](#) [Electromagnetic-field-assisted cell-laden 3D printed poloxamer-407 hydrogel for enhanced osteogenesis](#) *RSC Advances*, 2021, 11, 20342 IF 3.361 <https://doi.org/10.1039/D1RA01143J>
41. Ashwini Shinde, Kavitha Illath, Pallavi Gupta, Pallavi Shinde, [Ki-Taek Lim](#), Moeto Nagai, Tuhin Subhra Santra [A review of single-cell adhesion force kinetics and applications](#) *Cells*, 2021, 10 (3): 577 IF 6.600 <https://doi.org/10.3390/cells10030577>
42. Dinesh K. Patel+, Sayan Deb Dutta+, Woochul Shin, Keya Ganguly, and [Ki-Taek Lim*](#) [Fabrication and characterization of 3D printable nanocellulose-based hydrogel for tissue engineering](#) *RSC Advances*, 2021, 11, 7466 - 7478, IF 3.361 <https://doi.org/10.1039/D0RA09620B>
43. Patel DK, SD Dutta, G Keya and [Lim KT*](#) [Enhanced osteogenic potential of unzipped carbon nanotubes for tissue engineering](#) *Journal of Biomedical Materials Research Part A*, 2021 Oct, 109(10): 1869-1880 IF 4.396 <https://doi.org/10.1002/jbm.a.37179>
44. SD Dutta, DK Patel, K Ganguly and [KT Lim*](#) [Effects of GABA/β-glucan supplements on melatonin and serotonin content extracted from natural resources](#) *PLoS ONE*, 2021 Mar, 16(3): 0247890 IF 3.204 <https://doi.org/10.1371/journal.pone.0247890>
45. Dinesh K. Patel, Sayan Deb Dutta, Keya Ganguly and [Ki-Taek Lim*](#) [Multifunctional bioactive chitosan/cellulose nanocrystals scaffolds for the eradication of bacterial growth and sustained drug delivery](#) *International Journal of Biological Macromolecules*, 2021, 170 (15), 178-188, IF 6.953 [JCR 10%](#) <https://doi.org/10.1016/j.ijbiomac.2020.12.145>
46. K Ganguly, DK Patel, SD Dutta and [KT Lim*](#) [TEMPO-CNCs-capped gold nanoparticles for colorimetric detection of pathogenic DNA](#) *ACS Omega*, 2021, 16 (19): 12382-12930 IF 3.512 [A front cover \(Selected\)](#) [ACS LiveSlides™ presentation ACS LiveSlides \(Selected\)](#)
<https://doi.org/10.1021/acsomega.1c00359>
47. K Ganguly, SD Dutta, MS Jeong, DK Patel, SJ Cho and [KT Lim*](#) [Naturally-derived protein extract from *Gryllus bimaculatus* improves antioxidant properties and promotes osteogenic differentiation of hBMSCs](#) *PLoS ONE*, 2021, IF 3.204
<https://doi.org/10.1371/journal.pone.0249291>
48. Patel DK, SD Dutta, G Keya and [Lim KT*](#) [Mushroom-derived bioactive molecules as immunotherapeutic agents: A review](#) *Molecules*, 2021, 26(5), 1359 IF 4.411 <https://doi.org/10.3390/molecules26051359>

49. SD Dutta, DK Patel, K Ganguly and **KT Lim*** [Isolation and characterization of cellulose nanocrystals from the coffee grounds for tissue engineering](https://doi.org/10.1016/j.matlet.2021.129311) *Materials Letters*, 2021, 287 (15): 129311 IF 3.423 <https://doi.org/10.1016/j.matlet.2021.129311>
50. SD Dutta, H Jin, DK Patel, K Ganguly and **KT Lim*** [3D printed bioactive and biodegradable hydrogel scaffolds with alginate/gelatin/cellulose nanocrystals scaffolds for tissue engineering](https://doi.org/10.1016/j.ijbiomac.2020.12.011) *International Journal of Biological Macromolecules*, 2021, 167 (15): 644-658 IF 6.953 JCR 10% <https://doi.org/10.1016/j.ijbiomac.2020.12.011>
51. SD Dutta, Patel DK, B Jin, SI Choi, OH Lee and **KT Lim*** [Effect of Cirsium setidens \(Dunn\) Nakai. on the osteogenic differentiation of stem cells](https://doi.org/10.3892/mmr.2021.11903) *Molecular Medicine Report*, 2021, 23 (4), 1-1 IF 2.952 <https://doi.org/10.3892/mmr.2021.11903>
52. KJ Jang, H Seonwoo, M Yang, S Park, **KT Lim**, J Kim, PH Choung and JH Chung [Development and characterization of waste equine bone-derived calcium phosphate cement with human alveolar bone-derived mesenchymal stem cells](https://doi.org/10.1080/03008207.2019.1655003) *Connective Tissue Research*, 2021, 62 (2):164-175, IF 3.417 <https://doi.org/10.1080/03008207.2019.1655003>
53. K Ganguly, SD Dutta, DK Patel, SJ Cho, and **KT Lim*** [Protactia brevitaris seulensis derived protein isolate with enhanced osteomodulatory and antioxidative property](https://doi.org/10.3390/molecules20202554) *Molecules*, 2020, 25(54) IF 3.267
54. **Lim KT*** DK. Patel, SD Dutta, HW Choung, H Jin, JH Chung*, Evaluation of bone regeneration potential of human teeth derived bioceramics for tissue engineering, IF 4.324 *Nanomaterials*
55. SD Dutta, Patel DK, B Jin, SI Choi, OH Lee, **KT Lim***, Methanol extracts of Cirsium setidens (Dunn) Nakai. promote osteogenic differentiation of stem cells. IF 2.100 *Molecular Medicine Report*
56. **Lim KT***, H Jin, Patel DK, J Kim, H Seonwoo, JH Chung. 2020, [Evaluation of the osteogenic potential of stem cells in the presence of growth hormone under magnetic field stimulation](https://doi.org/10.1002/jbm.b.15111). ACS Biomaterials Science & Engineering. (Journal Cover)
57. Patel DK, YR Seo, SD Dutta, OH Lee, **Lim KT***, 2020, [Influence of maitake \(Grifola frondosa\) particle sizes on human mesenchymal stem cells and in vivo evaluation of their therapeutic potential](https://doi.org/10.1002/jbm.b.15111). Biomed Research International
58. KJ Jang, S Kim, S Park, W Kim, Y Gwon, S Park, **KT Lim**, H Seonwoo, J Kim, 2020, [Lithographically fabricated HA-incorporated PCL nanopatterned patch for tissue engineering](https://doi.org/10.1002/jbm.b.15111), Applied Sciences
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2. Korea, A composition of 3D printed ultra-small carbon nitride-decorated scaffolds with visible light-driven phototherapy for bacterial biofilm eradication, reducing hemorrhage, and immunomodulatory bone regeneration and its use for same, APN: [10-2024-0104797](#) (2024.02.23)
3. Korea, A simplified method for isolation, characterization, and culture optimization of bovine muscle satellite cells and use of the same, APN: 10-2021-0036743 (2021.03.22) | Granted No. [10-2594006](#) (2023.10.20)
4. Korea, A method of optimal cultivation for preparing cultured meat using plant and insect protein hydrolysate and application of this same, APN: 10-2021-0040899 (2021.03.30) | Granted No. [10-2581772](#) (2023.09.19)
5. Korea, A method for near-infrared laser-responsive spiky-structured microbots for effective killing of cancer cells and bacteria, & its applications, APN 10-2023-0104796 (2023.08.10)
6. Korea, A method for perfusion culture of bone marrow mesenchymal stem cells in 3D nHA/GelMa hydrogel promotes a compact bone graft template, APN 10-2023-0099900 (2023.07.31)
7. Korea, Method for promoting osteogenic differentiation of stem cells using soft hydrogel-based pulsating pressure stimulation technology and its applications, APN 10-2023-0058659 (2023.05.04)
8. Korea. Antioxidative and osteogenic differentiation potentials of Gryllus bimaculatus protein isolates, APN: 10-2021-0003914 (2021.01.12) | Granted No. [10-2525499](#) (2023.04.20)
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15. Korea, A method for curcumin releasing bioactive electrospun unzipped CNT/PDA nanofibrous mat with tunable mechanical properties and enhanced NIR-triggered bactericidal efficacy for wound healing, [APN 10-2022-0121579](#) (2022.09.26)
16. Korea, A method for trackable, conductive, and highly luminescent nanocellulose-based printable bio-resins, [APN 10-2022-0982193-11](#) (2022.09.19)
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