

PRAVEEN KUMAR VEMULA, PH.D.

EDUCATION

Indian Institute of Science	Ph.D. in Organic Chemistry; Bangalore, India – June 2005
Osmania University	M.Sc. in Organic Chemistry; Hyderabad, India – July 1998
Osmania University	B.Sc. in Chemistry, Zoology, Botany; Palem, India – June 1995

POSITIONS

2024 (Jan) –	Head of Research Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem)
2019 –	Associate Professor Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) Bangalore, India
2012 – 2018	Assistant Professor, Ramalingaswami Fellow Integrative Chemical Biology Theme Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) Bangalore, India
2008 – 2012	Ewing Marion Kauffman Entrepreneur Fellow Harvard Medical School, Brigham and Women's Hospital Boston, USA
2005 – 2007	Postdoctoral Fellow City College of New York, City University of New York New York, USA

SELECTED HONORS & RECOGNITIONS

- 2024 Institute of Chemical Technology-Royal Society of Chemistry (ICT-RSC) Innovation Award
- 2023 National Biotechnology Innovation Award-2023 (Dept. of Biotechnology, Govt. of India)
- 2020 Biotech Product, Process Development and Commercialisation Award
(Department of Biotechnology, Govt of India)
- 2019 Gandhian Young Technological Innovation Award 2019
- 2020 Member of Scientific Advisory Board, Color Threads Pvt. Ltd, India
- 2019 Member of Scientific Advisory Board, Artus Therapeutics, Inc. USA
- 2019 Member of Scientific Advisory Board, Sepio Health Pvt, Ltd. India
- 2016 Featured in *Voices of Biotech* 50 members to express opinion (By *Nature Biotechnology*)
- 2012 Ramalingaswami ReEntry Fellow, Department of Biotechnology, India 1st Rank
- 2010 MIT \$100K (Boston), Business Plan Competition, Track winner
- 2009 The Ewing Marion Kauffman Foundation Entrepreneur Fellow
- 1994 Endowment Prize: Topper in Zoology, Sri Venkateshwara College of Arts & Science, Palem
- 1994 Endowment Prize: Topper in Botany, Sri Venkateshwara College of Arts & Science, Palem
- 1993 Endowment Prize: Topper in Zoology, Sri Venkateshwara College of Arts & Science, Palem
- 1993 Endowment Prize: Topper in Botany, Sri Venkateshwara College of Arts & Science, Palem

MEMBERSHIPS, PROFESSIONAL ACTIVITIES & SERVICE

- Member, American Society of Transplantation, (2022 - Current)
- Member, Chemical Research Society of India (2008 - Current)

INTRA- and EXTRA-MURAL SERVICE

- Head of Research, inStem (Jan 2024 – current)
- Member, Board of Sciences, Sri Venkateshwara University, Tirupati, India (2022 - current)
- Member, Technical Evaluation Committee, BIRAC (Biotechnology Industry Research Assistance Council, 2023 – present)
- Member, Technical Evaluation Committee (Drug and Vaccine Development Task Force, DBT, India) 2023 – present
- Member, Technical Evaluation Committee (Stem Cell Therapeutics Development Task Force, DBT, India) 2023 – present
- Member, Evaluation Committee, Indo-US Science and Technology Forum (2017)
- Member, Expert Committee, Dept. of Science and Technology National Postdoctoral Fellow (2016 -)
- Member, Expert Committee, Dept. of Science and Technology Overseas Visiting Fellowships (2016 -)
- Member, Expert Committee, Dept. of Biotechnology, Nano Science Advisory Group II (2015 – 2018)
- Member, Expert Committee, Dept. of Science and Technology, Nano Science Advisory Group (2016 – 2021)
- Member, Organizing Committee, Bangalore INDIA Nano (2020 -)
- Campus Administration Services Committee (inStem, Bangalore)
- Campus Security Committee (inStem, Bangalore)
- Campus Sports Committee (inStem, Bangalore)
- Institutional Human Ethical Committee (inStem, Bangalore)
- Institutional Animal Ethics Committee (inStem, Bangalore)
- Microfluidics Facility Operational Committee (inStem, Bangalore)
- CCAMP, Incubation Working Committee (inStem, Bangalore)
- Chemistry Core Operational Committee (inStem, Bangalore)
- Member, Faculty Advisory Committee, Institutional Biosafety Committee (inStem, Bangalore)
- Member, Faculty Advisory Committee, Institutional NMR Facility (inStem, Bangalore)

EDITORIAL ACTIVITIES

Associate / Reviewing Editor:

- *Bulletin of Materials Science* (2017 -)
- *RSC Advances* (2015-2017)

Editorial Advisory Boards:

- *ACS Central Science* (2020 -)

Publications, Patents and Presentations

Summary of total publications/patents/citations

Peer reviewed papers:	88	Total Impact Factor:	941.26 (Avr.IF: 10.696)
Patents (pending/issued):	30	Citations (July, 2024):	7630
H-Index:	39	Book Chapters:	8
Cover page Articles:	10	Abstracts:	>25
Start-ups from own technologies:	8		

PUBLICATIONS

- co-first authors; * - corresponding author(s)

88. Mohan MK, Thorat K, Puthiyapurayil TP, Sunnapu O, Chandrashekharappa S, Ravula V, Khader R, Sankaranarayanan A, Muhammad H, **Vemula PK**.* "Oxime-functionalized anti-pesticide fabric reduces pesticide exposure through dermal and nasal routes, and prevents pesticide-induced neuromuscular-dysfunction and mortality " *Nat. Commun.* 2024, *15*, 4844.
87. Paul S, Ashrit P, Kumar M, Mete S, Ghosh S, **Vemula PK**,* Mukherjee A,* De P.* "Photostimulated extended nitric oxide (NO) release from water-soluble block copolymers to enhance antibacterial activity" *Biomacromolecules* 2024, *25*, 77-88.
86. Rajendran K, Pahal S, Badnikar K, Nayak MM, Subramanyam DN, **Vemula PK**, Krishnan UM.* "Methotrexate delivering microneedle patches for improved therapeutic efficacy in treatment of rheumatoid arthritis" *Int. J. Pharm.* 2023, *642*, 123184.
85. Kotla NG,* Isa ILM, Larranaga A, Maddiboyina B, Swamy SK, Sivaraman G,* **Vemula PK**.* "Hyaluronic acid-based bioconjugate systems, scaffolds, and their therapeutic potential" *Adv. Healthc. Mater.* 2023, e2203104.
84. Pandey S,# Mahato M,# Srinath P, Bhutani U, Goap TJ, Ravipati P, **Vemula PK**.* "Intermittent scavenging of storage lesion from stored red blood cells by electrospun nanofibrous sheets enhances their quality and shelf-life" *Nat. Commun.* 2022, *13*, 7394.
83. Ghate V,* Renjith A,* Badnikar K, Pahal S, Jayadevi SN, Nayak MM, **Vemula PK**,* Subramanyam DN. "Single step fabrication of hollow Microneedles and an experimental package for controlled drug delivery" *Int. J. Pharm.* 2022, *632*, 122546.
82. Pahal S,* Boranna R, Tripathy A, Goudar VS, Veetil VT, Kurapati R, Prashant GR, **Vemula PK**.* "Nanoarchitectonics for free-standing poly electrolyte multilayers films: Exploring the flipped surfaces" *ChemNanoMat* 2022, *8*, e202200462
81. Sunnapu O, Subramanian S, **Vemula PK**, Karuppannan S.* "Zingerone-encapsulated solid lipid nanoparticles as oral drug delivery systems to potentially target inflammatory diseases" *ChemNanoMat* 2022, *8*, e202200388
80. Sunnapu O, Khader R, Dhanka M, **Vemula PK**,* Karuppannan S.* "Enzyme-responsive hydrogel for delivery of an anti-inflammatory agent zingerone" *ChemNanoMat* 2022, *8*, e202200334
79. Ghosh S, Singh R, Vanwinkle ZM, Guo H, **Vemula PK**, Goel A, Haribabu B, Jala VR.* "Microbial metabolite restricts 5-fluorouracil-resistant colonic tumor progression by sensitizing drug transporters via regulation of FOXO3-FOXM1 axis" *Theranostics* 2022, *12*, 5574.
78. Dhayani A, Bej S, Mudnakudu-Nagaraju KK, Chakraborty S, Srinath P, Kumar AH, PS AM, Khristi A, Ramakrishnan S,* **Vemula PK**.* "An amphiphilic double-brush polymer hydrogel for sustained release of small molecules and biologics: Insulin-delivering hydrogel to control hyperglycemia" *ChemNanoMat* 2022, e202200184.
77. Rachamalla H, Voshavar C, Arjunan P, Mahalingam G, Chowath R, Banerjee R, **Vemula PK**,* Marepally S.* "Skin permeable nano-lithocholic-lipidoid efficiently alleviates psoriasis-like chronic skin inflammations" *ACS Applied Materials & Interfaces* 2022, *14*, 14859-14870.

76. Kotla NG, Singh R, Baby BV, Rasala S, Rasool J, Hynes SO, Martin D, Egan LJ, **Vemula PK**, Jala VR, Rochev Y,* Pandit A.* "Inflammation-specific targeted carriers for local drug delivery to inflammatory bowel disease" *Biomaterials* 2022, 22, 121364
75. Mukherjee D, Hasan Md-N, Ghosh R, Ghosh G, Bera A, Prasad SE, Hiwale A, **Vemula P**, Das R, Pal S. "Decoding the Kinetic Pathways Towards Lipid/DNA Complex of Alkyl-alcohol Cationic lipids formed in a Microfluidic Channel" *J. Phys. Chem. B.* 2022 126(3), 588-600.
74. Haroon MM*, Palakodeti D, **Vemula PK**. "Flow cytometry analysis of planarian stem cells using DNA and mitochondrial dyes" *Bio-protocol* 2022, 12(2), e4299
73. Mukherjee D, Paul D, Sarker S, Hasan Md-Nur, Ghosh R, Prasad S, **Vemula P**, Das R, Adhikary A, Pal S, Rakshit T. "PEG Mediated Fusion of Extracellular Vesicles with Cationic Liposomes for the Design of Hybrid Delivery Systems" *ACS Appl. Bio. Mater.* 2021, 4(12), 8259-8266.
72. Badnikar K,* Jayadevi SN, Pahal S,* **Vemula PK**, Nayak MM, Subramanyam DN. "Microscale engineering of hollow microneedle tips: Design, manufacturing, optimization and validation" *Drug Del. Transl. Res.* 2021, doi.org/10.1007/s13346-021-01062-w
71. Prabhakara C, Godbole R, Sil P, Jahnvi S, Gulzar SEJ, Zanten TS, Sheth D, Subhash N, Chandra A, Shivaraj A, Panikulam P, Ibrahim U, Nuthakki VK, Puthiyapurayil TP, Ahmed R, Najar AH, Lingamallu SM, Das S, Mahajan B, **Vemula P**, Bharate SB, Singh PP, Vishwakarma R, Guha A, Sundaramurthy V,* Mayor S.* "Strategies to target SARS-CoV-2 entry and infection using dual mechanisms of inhibition by acidification inhibitors" *PLoS Pathog.* 2021, 17, e1009706
70. Haroon MM, Lakshmanan V, Sarkar SR, Lei K, **Vemula PK***, Palakodeti D.* "Mitochondrial state determines functionally divergent stem cell population in planaria" *Stem Cell Rep.* 2021, 16, 1302-1316.
69. Pahal S*, Badnikar K, Ghate V, Bhutani U, Nayak MM, Nayak MM, Subramanyam DN, **Vemula PK***. "Microneedles for extended transdermal therapeutics: A route to advanced healthcare" *Eur. J. Pharm. Biopharm.* 2021, 159, 151-169.
68. Bej S, Dhayani A, **Vemula P**, Ramakrishnan S.* "Fine tuning crystallisation-induced gelation in amphiphilic double-brush polymers" *Langmuir* 2021, 37, 1788-1798.
67. Pooladanda V, Thatikonda S, Sunnapu O, Tiwary S, **Vemula PK**, Talluri MK, Godugu C. iRGD conjugated nimbolide liposomes protect against endotoxin induced acute respiratory distress syndrome. *Nanomedicine: Nanotechnology, Biology and Medicine.* 2021 33,102351.
66. Mukherjee D, Rakshit T,* Singh P, Mondal S, Paul D, Ahir M, Adhikari A, Puthiyapurayil TP, **Vemula PK**, Senapati D, Das R,* Pal SK.* "Differential flexibility leading to crucial microelastic properties of asymmetric lipid vesicles for cellular transfection: A combined spectroscopic and atomic force microscopy studies" *Colloids Surf B Biointerfaces* 2020, 196, 111363.
65. Singh R, Chandrashekharappa S, **Vemula PK**, Bodduluri H, Jala VR. "Microbial metabolite Urolithin B inhibits recombinant human monoamine oxidase A enzyme" *Metabolites* 2020, 10, 258.
64. Ghate V, Chaudhari P, Maxwell A, Lewis S, Pahal S, **Vemula PK**. "Rethinking Exosomes: From cell-to-cell courier services to individualized medicines" *AAPS* 2020, June. (Cover Feature) Invited Review in Magazine
63. Badnikar K,* Jayadevi SN, Pahal S,* Sripada S, Nayak MM, **Vemula PK**, Subrahmanyam DM "Generic molding platform for simple, low-cost fabrication of microneedles" *Macromol. Mater. Eng.* 2020, 2000072. (Cover Feature)

62. Sunnapu O, Ravipati P, Srinath P, Kalita S, Bhat PP, Harshitha SR, Sekar K, **Vemula PK**, Mahato M.* “Design of cationic amphiphiles for generating self-assembled soft nanostructures, micelles, and hydrogels” *Bull Mater. Sci.* 2020, *43*, 172.
61. Mukherjee D, Singh P, Rakshit T, Puthiya-Purayil T, **Vemula P**, Sengupta J, Das R,* Pal S.* “Deciphering the response of asymmetry in hydrophobic chains of novel cationic lipids towards biological function” *Phy. Chem. Chem. Phy.* 2020, *22*, 1738-1746.
60. Dhayani A, Kalita S, Mahato M, Srinath P, **Vemula PK**.* “Biomaterials for topical and transdermal drug delivery in reconstructive transplantation” *Nanomedicine* 2019, *14*, 2713-2733.
59. John G,* Nagarajan S, Silverman J, **Vemula PK**, Pillai CKS.* “Natural monomers: A mine for functional and sustainable materials – Occurrence, chemical modification and polymerization” *Prog. Polym. Sci.* 2019, *92*, 158-209.
58. Singh R, Chandrashekharappa S, Bodduluri SR, Baby BV, Hegde B, Kotla NG, Hiwale AA, Saiyed T, Patel P, Vijay-Kumar M, Langille MGI, Douglas GM, Cheng X, Rouchka EC, Waigel SJ, Dryden GW, Alatassi H, Zhang H-G, Haribabu B, **Vemula PK**,* Jala VR.* “Enhancement of the gut barrier integrity by a microbial metabolite through the Nrf2 pathway” *Nat. Commun.* 2019, *10*, 89.
57. Jain A, Dhiman S, Dhayani A, **Vemula PK**,* George S.* “Chemical fuel-driven living and transient supramolecular polymerization” *Nat. Commun.* 2019, *10*, 450.
56. Fries CA, Lawson SD, Wang LC, Slaughter KV, **Vemula PK**, Dhayani A, Joshi N, Karp JM, Rickard RF, Gorantla VS,* Davis MR.* “Graft-implanted, enzyme responsive, tacrolimus-eluting hydrogel enables long-term survival of orthotopic porcine limb vascularized composite allografts: A proof of concept study” *PLoS One* 2019, *14*, e0210914.
55. Thorat K, Pandey S, Chandrashekharappa S, Vavilthota N, Hiwale AA, Shah P, Sreekumar S, Upadhyay S, Phuntsok T, Mahato M, Mudnakudu-Nagaraju KK, Sunnapu O, **Vemula PK**.* “Prevention of pesticide-induced neuronal dysfunction and mortality with nucleophilic *poly*-Oxime topical gel” *Sci. Adv.* 2018, *4*, eaau1780.
54. Rangasami VK, Lochania B, Voshavar C, Rachamalla HR, Banerjee R, Dhayani A, Thangavel S, **Vemula PK**,* Marepally S.* “Exploring membrane permeability of Tomatidine to enhance lipid mediated nucleic acid transfections” *BBA Biomembranes* 2019, *1861*, 327.
53. Totiger TM, Srinivasan S, Jala VR, Lamicchane P, Dosch AR, Gaidarski-III AA, Joshi C, Rangappa S, Castellanos J, **Vemula PK**, Chen X, Kwon D, Kashikar N, VanSaun M, Merchant NB, Nagathihalli NS.* “Urolithin A, a natural compound to target PI3K/AKT/mTOR pathway in pancreatic cancer” *Mol. Cancer Ther.* 2018, Nov 7. pii: molcanther.0464.2018
52. Dzhonova D, Olariu R, Leckenby J, Dhayani A, **Vemula PK**, Prost J-C, Banz Y, Taddeo A.* Rieben R.* “Local release of tacrolimus from hydrogel-based drug delivery system is controlled by inflammatory enzymes *in vivo* and can be monitored non-invasively using *in vivo* imaging” *PLoS ONE* 2018, *13*, e0203409.
51. Kotla NG,* Rana S, Sivaraman S, Sunnapu O, **Vemula PK**, Pandit A, Rochev Y.* “Bioresponsive drug delivery systems in intestinal inflammation: State-of-the-art and future perspectives” *Adv Drug Deliv. Rev.* 2018, doi.org/10.1016/j.addr.2018.06.021
50. Dzhonova D, Olariu R, Leckenby J, Banz Y, Prost J-C, Dhayani A, **Vemula PK**, Voegelin E, Taddeo A.* Rieben R.* “Local injections of tacrolimus-loaded hydrogel reduce systemic immunosuppression-related toxicity in vascularized composite allotransplantation” *Transplantation* 2018, *102*, 1684.
49. Joshi N, Yan J, Levy S, Bhagchandani S, Slaughter K, Sherman NE, Amirault J, He X, Rui TS, Valic M, **Vemula PK**, Miranda OR, Levy O, Aliprantis A, Ermann J,* Karp JM.* “Towards an arthritis flare-responsive drug delivery system” *Nat. Commun.* 2018, *9*, 1275.

48. Sasidharan V,[#] Marepally S,[#] Elliott SA, Baid S, Lakshmanan V, Nayyar N, Bansal D, Sanchez-Alvarado A, **Vemula PK**,* Palakodeti D.* “The miR-124 family of microRNAs critical for regeneration of the brain and visual system in the planarian *Schmidtea mediterranea*” *Development* 2017, *144*, 3211-3223.
47. Hiwale AA, Voshavar C, Dharmalingam P, Dhayani A, Muktavaram R, Nadella R, Sunnapu O, Gandhi S, Naidu VGM, Chaudhuri A, Marepally S*, **Vemula PK***. “Scaling the effect of hydrophobic chain length on gene transfer properties of di-alkyl, di-hydroxy ethylammonium chloride based cationic amphiphiles” *RSC Adv.* 2017, *7*, 25398-405.
46. Lalitha K, Sridharan V, Maheswari CU, **Vemula PK**, Nagarajan S*. “Morphology transition in the helical tubules of supramolecular gels driven by metal ions” *Chem. Commun.* 2017, *53*, 1538-41.
45. Puroshothaman G, Juvala K, **Vemula PK**, Kirubakaran S, Thiruvengadam V.* “Structural studies of 1,2-O-cyclohexylidene-myo-inositol: Insights of hydrogen bonding interactions” *Acta Cryst. C* 2017, *C73*, 20-27.
44. Kurbet AS, Hegde S, Bhattacharjee O, Marepally S, **Vemula PK**, Raghavan S*. “Sterile inflammation enhances ECM degradation in integrin $\beta 1$ KO embryonic skin” *Cell Rep.* 2016, *16*, 3334-47.
43. Divya KP, Miroschnikov M, Dutta D, **Vemula PK**,* Ajayan PM, John G.* “*In situ* synthesis of metal nanoparticle embedded hybrid soft nanomaterials” *Acc. Chem. Res.* 2016, *49*, 1671-80. (An invited review)
42. **Vemula PK**, Jala VR. “Colonic crypts are natural gatekeepers of microbial metabolites to protect stem cells” *Transl. Cancer Res.* 2016, *5*(S3):S536-S539. (An invited commentary)
41. Meka RR, Godeshala S, Marepally S, Thorat K, Rachamalla HKR, Dhayani A, Hiwale AA, Banerjee R, Chaudhuri A, **Vemula PK**.* “Asymmetric cationic lipids based non-viral vectors for an efficient nucleic acid delivery.” *RSC Adv.* 2016, *6*, 77841-48.
40. Amit I, Baker D, Barker R, Berger B, Bertozzi C, Bhatia S, Biffi A, Demichelis F, Doudna J, Dowdy SF, Endy D, Helmstaedter M, Junca H, June C, Kamb S, Khvorova A, Kim D-H, Kim J-S, Krishnan Y, Lakadamyali M, Lappalainen T, Lewin S, Liao J, Loman N, Lundberg E, Lynd L, Martin C, Mellman I, Miyawaki A, Mummery C, Nelson K, Paz J, Peralta-Yahya P, Picotti P, Polyak K, Prather K, Qin J, Quake S, Regev, A, Rogers JA, Shetty R, Sommer M, Stevens M, Stolovitzky G, Takahashi M, Tang F, Teichmann S, Torres-Padilla M-E, Tripathi L, **Vemula P**, Verdine G, Vollmer F, Wang J, Ying JY, Zhang F, Zhang T. “Voices of biotech” *Nat. Biotechnol.* 2016, *34*, 270-275. (An invited Feature)
39. Saha P, Yeoh BS, Singh R, Chandrasekar B, **Vemula PK**, Haribabu B, Vijay-Kumar M.* Jala VR.* “Gut mitochondria conversion of dietary ellagic acid into bioactive phytochemical urolithin A inhibits heme peroxidases.” *PLoS ONE* 2016, *11*(6): e0156811.
38. Mathiyazhakan M, Upputuri PK, Sivasubramanian K, Dhayani A, **Vemula PK**, Zou P, Pu K, Yang C, Pramanik M, Xu C. “In situ synthesis of gold nanostars within liposomes for controlled drug release and photoacoustic imaging” *Sci. China Mater.* 2016, *59*, 892-900. (COVER FEATURE)
37. Selot R, Marepally S, **Vemula PK**, Jayandharan GR.* Nanoparticle coated viral vectors for gene therapy. *Curr Biotechnol.* 2016, *5*, 44-53.
36. Zhang S,[#] Ermann J,[#] Succi MD, Zhou A, Hamilton MJ, Cao B, Korzenik JR, Glickman JN, Vemula PK, Glimcher LH, Traverso G,* Langer R,* Karp JM.* “An inflammation-targeting hydrogel for local delivery in inflammatory bowel disease”. *Sci. Transl. Med.* 2015, *7*, 300ra128. ([#]Denotes equal contribution)
35. Sen D, **Vemula PK**, Jayandharan GR. Intra-articular gene transfer of miR-15b attenuates molecular mediators of hemophilic arthropathy in a murine model of hemophilia. *Mol. Therapy* 2015, *23*, S96-S97.
34. Lalitha K, Muthusamy K, Prasad YS, **Vemula PK**, Nagarajan S.* “Recent developments in β -C-glycosides: Synthesis and applications”. *Carbohydrate Res.* 2015, *402*, 158-171.

33. Gajanayake T, Olariu R, Leclere FM, Dhayani A, Yang Z, Bongoni AK, Banz Y, Constantinescu MA, Karp JM,* **Vemula PK**,* Robert R,* Vogelin E. "A single localized dose of enzyme-responsive hydrogel improves long-term survival of a vascularized composite allograft". *Sci. Transl. Med.* 2014, 6, 249ra110. (*denotes co-corresponding authors)
32. **Vemula PK**,[#] Kohler JE,[#] Blass A, Williams M, Xu C, Chen L, Jadhav SR, John G, Soybel DI,* Karp JM.* "Self-assembled hydrogel fibers for sensing the multi-compartment intracellular milieu". *Sci. Rep.* 2014, 4, 4466; DOI:10.1038/srep04466 ([#]Denotes equal contribution)
31. Periera MN, Lang N, Masiakos P, Sundback C, Ouyang B, Cho W, **Vemula PK**, Langer R,* Ferreira N,* Karp JM.* "Combined surface micropatterning and reactive chemistry maximizes tissue adhesion with minimal inflammation". *Adv. Healthcare Mater.* 2014, 3, 565-571.
30. **Vemula PK***, Wiradharma N, Ankrum JA, Miranda OR, John G, Karp JM*. "Prodrugs as self-assembled hydrogels: a new paradigm for biomaterials". *Curr. Opin. Biotechnol.* 2013, 24, 1174-1182. (*denotes co-corresponding authors), (*Invited Review*)
29. Balachandran VS, Jadhav SR, **Vemula PK***, John G*. "Recent advances in cardanol chemistry in a nutshell: from a nut to nutshell". *Chem. Soc. Rev.* 2013, 42, 427-438. (*denotes co-corresponding authors), (*Inside COVER FEATURE*) (*Invited Review*)
28. Xu C, Miranda-Nieves D, Ankrum JA, Matthiesen ME, Phillips JA, Roes I, Wojtkiewicz GR, Juneja V, Kultima JR, Zhao W, **Vemula PK**, Lin CP, Nahrendorf M, Karp JM*. "Tracking mesenchymal stem cells with iron oxide nanoparticles loaded poly(lactide-co-glycolide) microparticles". *Nano Lett.* 2012, 12, 4131-4139.
27. Sarkar D, Spencer JA, Phillips JA, Zhao W, Schafer S, Spelke DP, Mortensen LJ, Ruiz JP, **Vemula PK**, Sridharan R, Kumar S, Karnik R, Lin CP, Karp JM*. "Engineered cell homing". *Blood* 2011, 118, e184-e191.
26. **Vemula PK**, Anderson RR, Karp JM*. "Animal models for nickel allergy". *Nat. Nanotech.* 2011, 6, 533. [Correspondence]
25. **Vemula PK**, Anderson RR, Karp JM*. "Nanoparticles reduce nickel allergy by capturing metal ions". *Nat. Nanotech.* 2011, 6, 291-295.
24. **Vemula PK**[#], Boilard E[#], Syed A, Campbell NR, Muluneh M, Weitz DA, Lee DM, Karp JM*. "On-demand drug delivery from self-assembled nanofibrous gels: a new approach for treatment of proteolytic disease". *J. Biomed. Mater. Res. A* 2011, 97A, 103-110. ([#]denotes equal contribution)
23. Mitsouras D*, **Vemula PK**, Yu P, Tao M, Nyugen BT, Karp JM, Mulkern RV, Ozaki CK, Rybicki FJ. "Immobilized Contrast Enhanced (ICE) MRI: Gadolinium-based long-term MR contrast enhancement of the vein graft vessel wall". *Magn. Reson. Med.* 2011, 65, 176-183. (*COVER FEATURE*)
22. Nguyen BT[#], **Vemula PK**[#], Mitsouras D, Yu P, Tao M, Campagna C, Mulkern RV, Rybicki FJ, Karp JM*, Ozaki CK. "Immobilization of iron oxide magnetic nanoparticles for enhancement of vessel wall magnetic resonance imaging - An *ex vivo* feasibility study". *Bioconjugate Chem.* 2010, 21, 1408-1412. ([#]denotes equal contribution)
21. Jadhav SR, **Vemula PK**, Kumar R, Raghavan SR, John G*. "Sugar derived phase-selective molecular gelators as model oil spills and solidifiers". *Angew. Chem. Int. Ed.* 2010, 49, 7695-7698. (*COVER FEATURE*)
20. Sarkar D, **Vemula PK**, Zhao W, Gupta A, Karnik R, Karp JM*. "Engineered mesenchymal stem cells with self-assembled vesicles for systemic cell targeting". *Biomaterials* 2010, 31, 5266-5274.
19. John G*, Shankar BV, Jadhav SR, **Vemula PK**. "Biorefinery: A design tool for molecular gelators". *Langmuir* 2010, 26, 17843-17851. (*COVER FEATURE*)

18. **Vemula PK[#]**, Cruikshank GA[#], Karp JM, John G. "Self-assembled prodrugs: an enzymatically triggered drug delivery platform". *Biomaterials* 2009, *30*, 383-393. ([#]denotes equal contribution)
17. Jyothish K, **Vemula PK**, Jadhav SR, Francesconi LC, John G*. "Self-standing, metal nanoparticle embedded transparent films from multi-armed cardanol conjugates through *in situ* synthesis". *Chem. Commun.* 2009, 5368-5370. (*COVER FEATURE*)
16. Sarkar D, **Vemula PK**, Teo GSL, Spelke D, Karnik R, Wee YL, Karp JM*. "Chemical engineering of mesenchymal stem cells to induce a cell rolling response". *Bioconjugate Chem.* 2008, *19*, 2105-2109.
15. Kumar A[#], **Vemula PK[#]**, Ajayan PM, John G*. "Silver-nanoparticle-embedded anti-microbial paints based on vegetable oil" *Nat. Mater.* 2008, *7*, 236-241. ([#]denotes equal contribution)
14. **Vemula PK**, Douglas K, Achong C, Kumar A, Ajayan PM, John G*. "Autoxidation induced metal nanoparticles synthesis in biobased polymeric systems: A sustainable approach in hybrid materials development". *J. Biobased Mater. Bioenergy* 2008, *2*, 218-222. (*COVER FEATURE*)
13. **Vemula PK**, John G*. "Crops: a green approach toward self-assembled soft materials". *Acc. Chem. Res.* 2008, *41*, 769-782.
12. Mallia, VA[#], **Vemula PK[#]**, John G*, Kumar A, Ajayan PM*. "In situ synthesis and assembly of gold nanoparticles embedded glass forming liquid crystals" *Angew. Chem. Int. Ed.* 2007, *46*, 3269-3274. ([#]denotes equal contribution)
11. **Vemula PK[#]**, Mallia VA[#], Bizati K, John G. "Cholesterol phenoxy hexanoate mesogens: Effect of *meta* substituents on their liquid crystalline behavior and in situ metal nanoparticle synthesis" *Chem. Mater.* 2007, *19*, 5203-5206. ([#]denotes equal contribution)
10. **Vemula PK**, Aslam U, Mallia VA, John G*. "In situ synthesis of gold nanoparticles using molecular gels and liquid crystals from vitamin-C amphiphiles" *Chem. Mater.* 2007, *19*, 138-140.
9. **Vemula PK**, Li J, John G*. "Enzyme catalysis: tool to make and break amygdalin hydrogelators from renewable resources: a delivery model for hydrophobic drugs" *J. Am. Chem. Soc.* 2006, *128*, 8932-8938.
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7. John G*, **Vemula PK**. "Design and development of soft nanomaterials from biobased amphiphiles" *Soft Matter* 2006, *2*, 909-914. (*COVER FEATURE*) [Was selected as Best Cover page of the year-2006 from RSC]
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PATENTS (PENDING/ISSUED)

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26. Ghate V, Renijith A, Badnikar KA, Nataraja Jayadevi S, Pahal S, **Vemula PK**, Nayak MM, Narasimhaiah SD. "Single-step molding process for fabrication of hollow microneedle array" *India Provisional Patent application number 202241006792* (Filed date: 08-02-2022)
25. Jaswal AP, Bandyopadhyay A, **Vemula PK**, Mahato M, Kumar B. "Disease modifying agents, drug delivery system and method thereof for the management of osteoarthritis" *PCT application: PCT/IB2021/053780* (Filed date: 05-05-2021)
24. Marepally S, Arjunan P, Mahalingam G, **Vemula PK**, Srivastava A. "Substituted Lithocholic Acid and Methods Thereof" *India Provisional Patent Application Number: 202041047355* (Filed date: 29-10-2020)
23. Badnikar KA, Nataraja Jayadevi S, Pahal S, Dhayani A, **Vemula PK**, Mathew J, Nayak MM, Narasimhaiah Subramanyam D. "Hollow microneedle device" *India Provisional Patent Application Number: 201941050005* (Filed date: 04-12-2019)
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21. Jala VR, Bodduluri H, Singh R, **Vemula PK**, Chandrashekharappa S, Hiwale AA. "Compounds, compositions, methods of using and methods for preparing compounds" *International PCT Application: Application ref. number. 18034-03 (35783.04130)* (Filed date: 14-05-2019)
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16. Karp JM, **Vemula PK**, Campbell NR, Syed AM, Zhang S, Farokhzad OC, Langer RS. "Nanostructured gels capable of controlled release of encapsulated agents" *WO Patent 2,012,040,623*
15. Ozaki KC, Karp JM, Rybicki F, Mitsouras D, **Vemula PK**. "Implantable contrast agents and methods" *US Patent 20,120,251,443*
14. Karp JM, Sarkar D, **Vemula PK**. "Cell membrane engineering" *EP Patent 2,297,303*

13. John G, **Vemula PK**, Ajayan P, Kumar A. "A green approach in metal nanoparticle-embedded antimicrobial coatings from vegetable oils and oil-based materials" *WO Patent* 2,009,091,900
12. John G, **Vemula PK**. "Method for preparing hydro/organogelators from disaccharide sugars by biocatalysis and their use in enzyme-triggered drug delivery" *US Patent* 20,150,182,466
11. Karp JM, **Vemula PK**, Anderson RR. "Compositions and methods of prophylaxis for contact dermatitis" *US Patent* 20,120,321,573
10. Karp JM, **Vemula PK**, Sarkar D. "Release of agents from cells" *EP Patent* 2,488,164
9. Karp JM, **Vemula PK**, Anderson RR. "Compositions and methods of prophylaxis for contact dermatitis" *EP Patent* 2,482,807
8. John G, Jadhav SR, **Vemula PK**. "Methods for thickening hydrophobic liquids with amphiphilic esters" *EP Patent* 2,459,672
7. Karp JM, **Vemula PK**, Sarkar D. "Release of agents from cells" *WO Patent* 2,011,047,277
6. Karp JM, **Vemula PK**, Anderson RR. "Compositions and methods of prophylaxis for contact dermatitis" *WO Patent* 2,011,041,680
5. John G, Jadhav SR, **Vemula PK**. "Methods for thickening hydrophobic liquids with amphiphilic esters" *WO Patent* 2,011,014,653
4. John G, Jadhav SR, **Vemula PK**. "Methods for thickening hydrophobic liquids with amphiphilic esters" *US Patent Application* 13/387,536
3. Karp JM, **Vemula PK**, John G, Cruikshank G. "Drug delivery composition comprising a self-assembled gelator" *WO Patent* 2,010,033,726
2. Karp JM, **Vemula PK**, John G, Cruikshank G. "Drug delivery composition comprising a self-assembled gelator" *US Patent Application* 13/119,304
1. John G, **Vemula PK**. "Method for preparing hydro/organogelators from disaccharide sugars by biocatalysis and their use in enzyme-triggered drug delivery" *WO Patent* 2,007,139,854

ENTREPRENEURIAL ACTIVITY & TRANSLATIONAL EFFORT

Start-up companies formed based on the technologies developed by Vemula

2024		
Sturnus Innovations Pvt. Ltd. India	A biotech company, developing novel vaccine/drug delivery technologies Vemula: Co-Founder, Director, Member of the Scientific Advisory Board	
2023		
CaptureBio Pvt. Ltd. India	A medical device company, developing new blood bags to enhance the quality of blood Vemula: Co-Founder, Director, Member of the Scientific Advisory Board	
2023		
NeeDel Innovations Pvt. Ltd. India	A medical device company, developing devices for painless injections Vemula: Co-Founder, Director, Member of the Scientific Advisory Board	
2020		
Color Threads Pvt. Ltd. India	A medical textile company, antiviral facemasks and apparel have been launched Vemula: Co-Founder, Member of the Scientific Advisory Board	

2019	Sepio Health Pvt. Ltd. India	Anti-pesticide technologies company to protect farmers from pesticide toxicity Vemula: Co-Founder, Director, Member of the Scientific Advisory Board
2019	Artus Therapeutics, Inc. USA	Drug discovery company, developing therapeutics for barrier dysfunction diseases Vemula: Co-Founder, Director, Member of the Scientific Advisory Board
2015	Allevio Therapeutics, Inc. USA	Developing inflammation-targeting biomaterials, pre-clinical company Vemula: Consultant, Advisor
2012	Skintifique Paris, France	Dermatology and cosmetics company. Dermal care products have been launched Vemula: Consultant, Advisor

MENTORSHIP

Partial List of National / International Awards won by students/Postdocs for work at Vemula lab.

2023	Arthi Sunil Sahana Vasudevan	M. K. Bhan Young Researcher Fellowship 2023 Dept of Biotechnology Research Associate (DBT-RA) Fellowship 2023
2022	Subhashini Pandey Subhashini Pandey	Winner Best Poster and International Travel Grant at inStem Annual Review of Research Obaid Siddiqui Best Innovative Research Paper Award 2022, CIFF, NCBS
2021	Subhashini Pandey Shalini Sanyal	SARANSH, 3-minute Thesis Competition in Life Sciences, by Indian Academy of Sciences SERB, National Postdoctoral Fellowship
2020	Mohamed M.	Winner Best Poster and International Travel Grant at inStem Annual Review of Research
2019	Ketan Thorat Ketan Thorat	Gandhian Young Technological Innovation Award 2019, by SRISTI-BIRAC Obaid Siddiqui Prize for the Best Paper in 2018, NCBS
2018	Suman Pahal Sanjeeb Kalita Subhashini Pandey Mohamed M.	DST, Scheme for Young Scientist and Technologists Award Dept of Biotechnology, Research Associate Fellowship Winner Best Poster and International Travel Grant at inStem Annual Review of Research Winner Best Poster and International Travel Grant at inStem Annual Review of Research
2017	Sandeep Chandrashekharappa Kiran Kumar MN Ketan Thorat	DST, Scheme for Young Scientist and Technologists Award SERB, Dept of Science and Technology, National Postdoctoral Fellowship Winner Best Poster and International Travel Grant at inStem Annual Review of Research
2015	Srujan Marepally	SERB, Dept of Science and Technology, National Postdoctoral Fellowship

SELECTED INVITED & PLENARY LECTURES

Praveen Kumar Vemula has given >210 national and international invited lectures.

Additionally, Vemula gave 3 TEDx talks to disseminate his translational research to larger public.

CURRENT ACTIVE GRANTS

PR192091

Department of Defense, USA

Medical Research Program (PRMRP) Investigator-Initiated Research Award

“Novel Graft-Implanted Macrophage-Targeted Nanoemulgels for In Situ Immunosuppression in Vascularized Composite Allotransplantation”

Grant Period: 10/2020 to 09/2023 (No Cost Extension is running till 09/2025)

Amount: \$418,325

PI: Praveen Kumar Vemula (inStem, Bangalore)

Co-PIs: Vijaya S. Gorantla (Wake Forest Institute of Regenerative Medicine, USA), Jelena Janjic (Duquesne University, USA)

RT180093P2

Department of Defense, USA

Reconstructive Transplant Research Program (RTRP) Investigator-Initiated Research Award

“A Graft Implanted Macrophage-Enzyme Responsive Immunosuppressive Therapy (MERIT) to Prevent Chronic Rejection in Vascularized Composite Allotransplantation”

Grant Period: 10/2019 to 09/2023 ((No Cost Extension is running till 09/2024)

Amount: \$140,701

PI: Praveen Kumar Vemula (inStem, Bangalore)

Co-PIs: Vijaya S. Gorantla (Wake Forest Institute of Regenerative Medicine, USA), Jelena Janjic (Duquesne University, USA)

Artus Therapeutics, Inc. USA

“Developing New Chemical Entities for the treatment of inflammatory bowel disease”

Grant Period: 12/2019 to 11/2022 (NCE is ongoing)

Amount: \$200,000

PI: Praveen Kumar Vemula (inStem, Bangalore)

SUPRA grant from Science & Engineering Research Board (SERB)

“Development of machine for rapid fabrication of the biocompatible microneedles, followed by clinical testing”

Grant Period: 04/2023 to 03/2026

Amount: INR 34,62,888 (to Vemula lab)

Co-PI: Praveen Kumar Vemula (inStem, Bangalore)

PI: Prof. Prasanna Gandhi (IIT-Bombay)

COMPLETED GRANTS

BT/PR29948/NNT/28/1576/2018

Department of Biotechnology, Nanobiotechnology Task Force, Govt. of India

“Fabrication of catalytic nano-fiber based facemask and clothing to prevent pesticide-induced neuronal dysfunction and mortality”

Grant Period: 06/2019 to 12/2022 (with NCE)

Amount: INR 90,20,560

PI: Praveen Kumar Vemula (inStem, Bangalore)

Co-PIs: Colin Jamora (inStem, Bangalore)

IMPRINT – Grant from Department of Science and Technology, Govt of India (From IISc)
“Study of pain-free needles for drug delivery”
Grant Period: 12/2018 to 11/2019 =
Amount: INR 30,00,000
PI: Praveen Kumar Vemula (inStem, Bangalore)
Co-PIs: Dinesh Narasimhaiah Subramanyam (IISc, India), and Manjunatha Naik (IISc, India)

BT/PR29948/NNT/28/1576/2018
Department of Biotechnology, Nanobiotechnology Task Force, Govt. of India
“Fabrication of catalytic nano-fiber based facemask and clothing to prevent pesticide-induced neuronal dysfunction and mortality”
Grant Period: 06/2019 to 12/2022 (with NCE)
Amount: INR 90,20,560
PI: Praveen Kumar Vemula (inStem, Bangalore)
Co-PIs: Colin Jamora (inStem, Bangalore)

inStem/8284/01/2017-18 & inStem/8288/2018-19
Manus Biosciences, Inc, USA
“Develop an insect (mosquito) repellent formulation based on the natural insecticide nootkatone”
Grant Period: 09/2017 to 08/2020
Amount: INR 25,68,000
PI: Praveen Kumar Vemula (inStem, Bangalore)

BT/PR12490/AAQ/3/716/2015
Department of Biotechnology, Govt. of India
“Mining the genome and metagenome of marine microbiome for pks-nrps biosynthetic gene clusters and bioactive small molecules: A coordinated R&D initiative in marine genomics”
Grant Period: 05/2016 to 05/2020 (with NCE)
Amount: INR 52,68,940 to PKV, and total 180,70,382)
PI: Joseph Selvin (Pondicherry University, India)
Co-PIs: Praveen Kumar Vemula (inStem, Bangalore) and Joydeep Mukherjee (Jadavpur University, India)

INT/SWISS/SNSFP-51/2015
Dept of Science and Technology -Swiss National Science Foundation (Indo-Swiss Joint Grant)
“Effect of a locally delivered immunosuppressives encapsulated in self-assembled hydrogel systems on vascularized composite allotransplantation”
Grant Period: 04/2015 to 04/2018
Amount: INR 35,20,500
PI: Praveen Kumar Vemula (inStem, Bangalore)
Co-PI: (Robert Reiben, University of Bern, Switzerland)

C-CAMP/BIG/90 H
DBT-BIRAC Biotechnology Ignition Grant, Entrepreneurship Grant
“Low-cost prophylactic topical dermal cream to prevent chronic exposure of toxic pesticides”
Grant Period: 11/2014 to 10/2016
Amount: INR 48,95,000
Solo PI: Praveen Kumar Vemula (inStem, Bangalore)

BT/RLR/RE-ENTRY/01/2011
Department of Biotechnology - Ramalingaswami Fellowship, Govt of India
“Self-assembled amphiphilic prodrug-based gelators: A novel drug delivery platform approach for Glioblastoma Multiforme therapy”
Grant Period: 01/2013 to 01/2018
Amount: INR 74,50,000
Solo PI: Praveen Kumar Vemula (inStem, Bangalore)