Kunal Sharan

Address: Department of Molecular Nutrition, CSIR- Central Food and Technological Research Institute, Mysore-570020

Current Position

Scientist (August 2014-till date.)

Department of Molecular Nutrition, CSIR-Central Food and Technological Research Institute

Education

Ph.D. Life Sciences, Central Drug Research Institute, Lucknow, (2006-2011). **Ph.D. registration:** Jawaharlal Nehru University, New Delhi, India.

M.Sc. Biotechnology, Jiwaji University, Gwalior, India (2003-2005)

B.Sc. Biology, Guru Nanak Dev University, Amritsar, India (2000-2003)

Scientific recognition, Awards and Fellowships

- Co-Chair for Cell Biology and Cell Signaling session at annual meeting of SBC(I) 2016
- Received SERB Young Scientist startup Research grant award 2015.
- Received Wellcome Trust Sanger Institute Postdoctoral Scientist Fellowship 2011
- In a mapping of Indian research output on osteoporosis, published by Annals of Library and Information Studies, recognized as researcher with second highest h-index value in India. (Ref: Annals of Library and Information Studies, vol. 60, Dec 2013, pp 276-283).
- Recognized among top 5 leading Indian authors with comparatively higher citation impact per paper (Ref: J Ortho Bone Disord 2017, 1(8): 000145.)
- Best Oral Presentation Award in Biological Sciences at CDRI's Diamond Jubilee Celebrations
- Qualified for Department of Biotechnology-Junior research fellowship (DBT JRF), 2006, for securing 5 years fellowship for doing PhD.
- Qualified Council for Scientific and Industrial Research -National Eligibility Test (CSIR-NET), 2005.
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Research Experience

Post doctoral fellow, (April 2011- April 2014) Mouse and Zebrafish Genetics, Wellcome Trust Sanger Institute, Cambridge, UK

Editorial/Reviewer responsibilities

Guest Associate Editor

1. Special issue on "Developmental Origin of Diseases: A Special Focus on the Parental Contribution towards Offspring's Adult Health" in Frontiers in Endocrinology and Frontiers in Pediatrics

2. Special issue on "Vascular and Skeletal Crosstalk in Health and Disease" in Frontiers in Endocrinology

Editorial Board Member

Frontiers in Endocrinology (2020- till date) World Journal of Orthopedics (2010-2014)

Ad hoc reviewer for

1) Journal of Bone and Mineral Research, 2) Biomaterials, 3) Diabetes, Obesity and Metabolism, 4) Phytomedicine, 5) Journal of Ethanopharmacology, 6) British Journal of Nutrition, 7) Biomedicine & Pharmacotherapy, 8) Functional Foods in Health and Disease, 9) Journal of Food Science and Technology, 10) International Journal of Medicine and Medical Sciences, 11) Journal of Endocrinology, etc.

Grant reviewer for

Science and Engineering Research Board, Gov. of India DBT Wellcome India Alliance Early carrier fellowship, Gov. of India

Member of Scientific Societies

Society of Biological Chemists, India (Life member)

Management and Teaching Experience

- Member of the Institute management council at CFTRI, Mysore, India. (2015-2017)
- Member of Institutional seminar committee at CFTRI, Mysore, India. (2015-2017)
- Subject coordinator for the subject "Cell, Tissue and Molecular Biology" for the AcSIR Integrated MSc-PhD programme on Nutritional Biology at CFTRI, Mysore, India. (2016-2019)
- Instructor for AcSIR PhD coursework at CFTRI, Mysore, India. (2014-till date)
- Instructor for the AcSIR Integrated MSc-PhD programme on Nutritional Biology at CFTRI, Mysore, India. (2015-2020)
- General Secretary, Food Research Institute Gymkhana, CFTRI (2022-till date)

Students and Postdocs guided

Post-doctoral Fellows Mentored Dr. Shaheen Ali Jafery (SERB N-PDF) Mentoring Dr. Archer, Ann Catherine (DBT Wellcome Trust Early Career Fellow)

• Ph.D. students

Dr. Govindraj Ellur, DST-inspire JRF (Ph.D. awarded)

Ms. Kalpana Patel, CSIR JRF (Ph.D. awarded) Mr. SVVS Ravi Mangu, CSIR JRF (Ph.D. awarded) Ms. Sowmya GV, ICMR SRF (Ph.D. awarded) Ms. Abhilipsa Das, CSIR JRF Ms. Anjana

• Research Assistant/Project JRF Mr. Muzaffar Chonche, Project JRF Ms. Shibani Bose, Project JRF

• Research Assistant/Project JRF guided Ms. Jhansi Lakshmi, Project Assistant Mr. Md. Touseef Khan, Project Assistant Ms. Deepa Bachagol, Project Assistant Ms. Heena Pahwa, Project JRF

• M.Sc. Dissertation students trained Ms. Reenee Devi Ms. Rehna Babu Mr. Jibin Balu MT

Mr. Tushar Kulkarni Mr. Tenzin Choedar Ms. Shweta Rugi

Patents

- Novel flavonol compounds, a bioactive extract/fraction from *Ulmus wallichiana* and its compounds for prevention for treatment of osteo-health related disorders. (WO/2009/110003) US patent 8669232 B2
- 2. Novel flavonol compounds, compositions thereof and method for treating bone disorders. ES2546864T3
- 3. Ulmoside-A-derived compound from Ulmus Wallichiana Planchon useful for prevention or cure of metabolic diseases. EP3027633B1

Technology Licensed

Novel flavonol compounds, a bioactive extract/fraction from *Ulmus wallichiana* and its compounds for prevention for treatment of osteo-health related disorders. (WO/2009/110003); http://www.wipo.int/pctdb/en/wo.jsp?WO=2009110003. Licensed to Kemxtree LLC, NJ, USA for developing as an orally active rapid fracture healing agent.

Publications

Total No.s: 35, Total citations: >1200, h-index: 20

- 1. Singh P, Gollapalli K, Mangiola S Sharan K..... Yadav VK. Taurine deficiency as a driver of aging. *Science*. 2023, 380 (6649), eabn9257. IF-63.7
- Patel K, Mangu SR, Sukhdeo SV, Sharan K[#]. Sesamol improves bone mass in ovary intact growing and adult rats but accelerates bone deterioration in the ovariectomized rats. *The Journal of Nutritional Biochemistry*. 2023, 109384. IF-6.05
- Vamadeva SG, Patel K, Mangu SR, Ellur G, Sukhdeo SV, Sharan K[#]. Maternal omega-3 LC-PUFA supplementation programs an improved bone mass in the offspring with a more pronounced effect in females than males at adulthood. *The Journal of Nutritional Biochemistry*. 2022, 109245. IF-6.05
- 4. Vamadeva SG, Bhattacharyya N, Sharan K[#]. Maternal Plasma Glycerophospholipids LC-PUFA Levels Have a Sex-Specific Association with the Offspring's Cord Plasma Glycerophospholipids-Fatty Acid Desaturation Indices at Birth. *International Journal of Environmental Research and Public Health*. 2022; 19 (22), 14850. IF-4.614
- Mangu SR, Patel K, Sukhdeo SV, Savitha MR, Sharan K[#]. Maternal high cholesterol diet negatively programs offspring bone development and downregulates hedgehog signaling in osteoblasts. *Journal of Biological Chemistry*. 2022; 102324. IF-5.49
- Pahwa H, Sharan K[#]. Food and nutrition as modifiers of the immune system: A mechanistic overview. *Trends in Food Science & Technology*. 2022; 123, 393-403. IF-11.08
- Patel K, Mangu SR, Sukhdeo SV, Sharan K[#]. Ethanolic extract from the root and leaf of Sida cordifolia promotes osteoblast activity and prevents ovariectomy-induced bone loss in mice. *Phytomedicine*. 2022; 99, 154024. IF-5.34
- 8. Shivarudrappa AH, Sharan K, Ponesakki G. Lutein activates downstream signaling pathways of unfolded protein response in hyperglycemic ARPE-19 cells. *European Journal of Pharmacology*. 2022; 914, 174663. IF-4.43
- Ellur G, Sukhdeo SV, Khan MT, Sharan K[#]. Maternal high protein-diet programs impairment of offspring's bone mass through miR-24-1-5p mediated targeting of SMAD5 in osteoblasts. *Cellular and Molecular Life Sciences*. 2021; 78 (4), 1729-1744 doi.org/10.1007/s00018-020-03608-6. IF-9.26
- Pahwa H, Khan MT, Sharan K[#]. Hyperglycemia impairs osteoblast cell migration and chemotaxis due to a decrease in mitochondrial biogenesis. *Molecular and Cellular Biochemistry*. 2020; 469:109–118. IF-3.4
- Gavvaa C, Patel K, Kudre T, Sharan K, Nandini CD. Glycosaminoglycans from fresh water fish processing discard - Isolation, structural characterization, and osteogenic activity. *International Journal of Biological Macromolecules*. 2020; 145, 558-567. IF-6.95

- Ali SJ, Ellur G, Patel K, Sharan K[#]. Chlorpyrifos Exposure Induces Parkinsonian Symptoms and Associated Bone Loss in Adult Swiss Albino Mice. *Neurotoxicity Research*. 2019; 36 (4), 700-711. IF-3.91
- Ali SJ, Ellur G, Khan MT, Sharan K[#]. Bone loss in MPTP mouse model of Parkinson's disease is triggered by decreased osteoblastogenesis and increased osteoclastogenesis. *Toxicology and applied pharmacology*. 2019; 363, 154-163. IF-4.22
- Srivastav A, Changkija B, Sharan K, Nagar GK, Bansode FW. Influence of Dutasteride and Nifedipine on CatSper gene expression in epididymis of mice. *Reproduction*. 2018; REP-17-0664. IF-3.91
- Deepa B, GS Joseph, Ellur G, Patel K, Pamisetty A, Mittal M, China SP, Singh RP and Sharan K[#]. Stimulation of liver IGF-1 expression promotes peak bone mass achievement in growing rats: A study with Pomegranate seed oil. *J Nutr Biochem.* 2018; 52, 18-26. IF-6.05
- Lewis K*, Sharan K*, Takumi T, Yadav VK. (2017) Skeletal Site-specific Changes in Bone Mass in a Genetic Mouse Model for Human 15q11-13 Duplication Seen in Autism. Scientific Reports. 2017; 7:1. doi:10.1038/s41598-017-09921-8. *- First authors IF-4.38
- Sharan K, Lewis K, Furukawa T, Yadav VK. Regulation of bone mass through pinealderived melatonin-MT2 receptor pathway. *J Pineal Research*. 2017; 63:e12423. https://doi.org/10.1111/jpi.12423. IF- 13.01
- Sharan K and Yadav VK. Hypothalamic control of bone metabolism. Best Practice & Research Clinical Endocrinology & Metabolism. 2014; 28 (5), 713-723. IF-4.69
- Roman-Garcia P, Quiros-Gonzalez I, Mottram L, Lieben L, Sharan K, Wangwiwatsin A, Tubio J, Lewis K, Wilkinson D, Santhanam B, Sarper N, Clare S, Vassiliou GS, Velagapudi VR, Dougan G and Yadav VK. Vitamin B₁₂-dependent taurine synthesis regulates growth and bone mass. J Clin Invest. 2014; 1;124(7):2988-3002. IF-14.81
- 20. Khan MP, Mishra JS, **Sharan K**, Yadav M, Singh AK, Srivastava A, Kumar S, Bhaduaria S, Maurya R, Sanyal S, and Chattopadhyay N. A novel flavonol *C*-glucoside preserves bone mineral density, microarchitecture and biomechanical properties in the presence of glucocorticoid by promoting osteoblast survival: a comparative study with human parathyroid hormone. **Phytomedicine**. 2013; 20 (14), 1256-1266. **IF-5.34**
- 21. Khan K., Sharan K, Swarnkar G, Chakravarti B, Mittal M, Barbhuyan TK, China SP, Khan MP, Nagar GK, Yadav D, Dixit P, Maurya R, and Chattopadhyay N. Positive skeletal effects of cladrin, a naturally occurring dimethoxydaidzein, in osteopenic rats that were maintained after treatment discontinuation. *Osteoporosis Int*. 2012. 24(4): p. 1455-70. IF-4.51
- 22. Khan K, Singh A, Mittal M, Sharan K, Singh N, Dixit P, Sanyal S, Maurya R, and Chattopadhyay N. [6]-Gingerol induces bone loss in ovary intact adult mice and augments osteoclast function via the transient receptor potential vanilloid 1 channel. *Mol Nutr Food Res.* 2012 56(12): p. 1860-73. IF-5.91

- Balaramnavar VM, Khan IA, Siddiqui JA, Khan MP, Chakravarti B, Sharan K, Swarnkar G, Rastogi N, Siddiqui HH, Mishra DP, Chattopadhyay N, and Saxena AK. Identification of novel 2-((1-(benzyl(2-hydroxy-2-phenylethyl)amino)-1-oxo-3-phenylpropan-2-yl)carbamoyl) benzoic acid analogues as BMP-2 stimulators. *J Med Chem*. 2012 55(19): p. 8248-59. IF-7.45
- 24. Siddiqui JA, Swarnkar G, Sharan K, Chakravarti B, Gautam AK, Rawat P, Kumar M, Gupta V, Manickavasagam L, Dwivedi AK, Maurya R and Chattopadhyay N. A Naturally Occurring Rare Analog of Quercetin Promotes Peak Bone Mass Achievement and Exerts Anabolic Effect on Osteoporotic Bone. *Osteoporosis International*. 2011; 22(12):3013-27. IF-4.51
- 25. Sharan K, Mishra JS, Swarnkar G, Siddiqui JA, Khan K, Rashmi K, Maurya R, Sanyal S, Chattopadhyay N. A novel quercetin analog from a medicinal plant promotes peak bone mass achievement, bone healing after injury and exerts anabolic effect on osteoporotic bone: The role of aryl hydrocarbon receptor as a mediator of osteogenic action. *J Bone Miner Res*. 2011; 26 (9), 2096-2111. IF-6.74
- 26. Swarnkar G, Sharan K, Siddiqui JA, Chakravarti B, Rawat P, Kumar M, Arya KR, Maurya R, Chattopadhyay N. Studies on the effects of a novel compound, (2S,3S)-aromadendrin-6-Cβ-D-glucopyranoside isolated from the steam-bark of Ulmus Wallichaiana Planchon on bone cells. *Eur J Pharmacol*. 2011 May 11;658(2-3):65-73. **IF-4.43**
- 27. Siddiqui JA, Sharan K, Swarnkar G, Rawat P, Kumar M, Manickavasagam L, Maurya R, Pierroz D, Chattopadhyay N. Quercetin-6-*C*-β-D-glucopyranoside isolated from *Ulmus Wallichiana*-planchon is more potent than quercetin in inhibiting osteoclastogenesis and mitigating ovariectomy-induced bone loss in rats. *Menopause*. 2011 Feb;18(2):198-207. IF-2.95
- Swarnkar G, Sharan K, Siddiqui JA, Mishra JS, Khan K, Khan MP, Gupta V, Rawat P, Maurya R, Dwivedi AK, Sanyal S, and Chattopadhyay N. A naturally occurring naringenin derivative exerts potent bone anabolic effects by mimicking oestrogen action on osteoblasts. *Br J Pharmacol*, 2011. 165(5): p. 1526-42. IF-8.74
- Tyagi AM, Srivastava K, Sharan K, Yadav D, Maurya R, Singh D. Daidzein Prevents the Increase in CD4+CD28null T Cells and B Lymphopoesis in Ovariectomized Mice: A Key Mechanism for Anti-Osteoclastogenic Effect. *PLoS One*, 2011. 6(6): p. e21216. IF-3.24
- 30. Siddiqui JA, Swarnakr G, Sharan K, Chakravarti B, Sharma G, Rawat P, Kumar M, Pierroz D, Maurya R, Chattopadhyay N. 8,8"-biapigeninyl stimulates osteoblast functions and inhibits osteoclast and adipocyte functions: osteoprotective action of 8,8"-biapigeninyl in ovariectomized mice. *Mol Cell Endocrinol* 2010; 323:256-67. IF-4.1
- 31. Sharan K, Swarnkar S, Siddiqui JA, Kumar A, Rawat P, Kumar M, Nagar GK, Manickavasagam L, Singh SP, Mishra G, Wahajuddin, Jain GK, Maurya R, Chattopadhyay

N. A Novel flavonoid, 6-*C*-β-D-glucopyranosyl-(2S,3S)-(+)-3',4',5,7-tetrahydroxyflavanone, isolated from *Ulmus wallichiana*-planchon mitigates ovariectomy-induced osteoporosis in rats. *Menopause* 2010; 17:577-86. **IF-2.95**

- 32. Sharan K, Siddiqui JA, Swarnkar S, Tyagi AM, Kumar A, Rawat P, Kumar M, Arya KR, Manickivasagam L, Jain GK, Maurya R, Chattopadhyay N. Extract and fraction of *Ulmus wallichiana* planchon promote peak bone achievement and have non-estrogenic osteoprotective effect. *Menopause* 2010; 17:393-402. IF-2.95
- Rawat P, Kumar M, Sharan K, Chattopadhyay N, Maurya R. Ulmosides A and B: Flavonoid 6-C-glycosides from Ulmus wallichiana, stimulating osteoblast differentiation assessed by alkaline phosphatase. *Bioorganic & Medicinal Chemistry Letters*. 2009; 15;19(16):4684-7. IF-2.82
- 34. Sharan K*, Siddiqui JA, Swarnkar G, Maurya R, Chattopadhyay N. Role of phytochemicals in the prevention of menopausal bone loss: evidence from in vitro and in vivo, human interventional and pharma-cokinetic studies. *Curr Med Chem* 2009; 16:1138-1157. *-Corresponding author. IF- 4.53
- Sharan K, Siddiqui JA, Swarnkar G, Chattopadhyay N. Role of calcium-sensing receptor in bone biology. *Indian J Med Res* March 2008; 127: 274-286. IF- 2.37

Editorials

- 1. Sharan K[#]. Editorial: Vascular and Skeletal Crosstalk in Health and Disease. Frontiers in Endocrinology; 2022, 2950
- Sharma A, Mishra M, Sharan K[#]. Editorial: Developmental Origin of Diseases: A Special Focus on the Parental Contribution Towards Offspring's Adult Health. Frontiers in Endocrinology; 2023, 1046

Abstracts Published in National and International Conferences/Symposia

- Sharan K, Siddiqui JA, Swarnkar G, Rawat P, Maurya R, Sanyal S and Chattopadhyay N. Isolation and characterization of a novel bone forming agent (CDROSTEOID-II) from natural source. 8th European Congress on Menopause (EMAS)/Maturitas 63, Supplement 1 (2009) S1–S136
- Rawat P, Kumar M, Sharan K, Chattopadhyay N, Maurya R. Osteogenic constituents of Ulmus wallichiana. 4th International Symposium on Current Trends In Drug Discovery Research (CTDDR-2010)/Medicinal Chemistry Research 19, S102-S103

- **3.** Sharan K, Siddiqui JA, Swarnkar G, Rawat P, Maurya R, Sanyal S and Chattopadhyay N. GTDF is a novel orally active bone forming small molecule from natural source. *5th Annual Conference of Indian Society of bone and mineral research (ISBMR-2009).*
- 4. Swarnkar G, Sharan K, Siddiqui JA, Tyagi AM, Rawat P, Maurya R and Chattopadhyay N. 6-glucopyranosyl-4',5',7-trihydroxyflavanone is a novel dual action compound: inhibit bone marrow adipogenesis and promotes osteoblastogenesis. *5th Annual Conference of Indian Society of bone and mineral research (ISBMR-2009).*
- 5. Sharan K, Yadav VK. Melatonin regulation of bone mass. Wellcome trust Sanger Institute 1st Model Organisms Symposium 2012.
- Ch. Reenee Devi, Md Touseef Khan, Govindraj Ellur and Kunal Sharan. Maternal hypercholesterolemia is associated with altered in-utero mineralization of the offspring's bone. 85th National conference of Society of Biological Chemists India (SBCI)-2016. *Received Best poster award
- 7. Bachagol DB, Joseph GS, Ellur G, Aruna P, Singh RP and Sharan K. PSO enhances the achievement of peak bone mass by epigenetic regulation of liver IGF-1 in growing female rats. 85th National conference of Society of Biological Chemists India (SBCI)-2016.
- 8. Ellur G, Joseph GS, Khan MT and Sharan K. Maternal excess protein during embryonic development results in the aberrant bone formation in the offspring. 85th National conference of Society of Biological Chemists India (SBCI)-2016.