

**Citation (summary) on the outstanding research work of Dr. Mohan Wani, Scientist G, National Centre for Cell Science, Pune on which award is claimed in about 250 words signed by the nominator.**

Dr. Mohan Wani has made several outstanding and innovative original research contributions in the field of "Pathophysiology of bone and cartilage remodeling in musculoskeletal and autoimmune diseases such as osteoporosis, osteoarthritis and rheumatoid arthritis". Increased activity of bone resorbing osteoclasts and decreased activity of bone forming osteoblasts are key pathological features in osteoporosis and other musculoskeletal diseases. The present treatment prevents only the partial bone loss and does not enhance/induce new bone formation. Dr. Wani revealed for the first time that interleukin-3 (IL-3), a cytokine secreted by T lymphocytes has two novel roles in regulation of pathophysiology of bone remodeling. IL-3 inhibits the increased osteoclast activity and protects the pathological bone loss, and it also enhances in vivo bone regenerating potential of human mesenchymal stem cells. He has further demonstrated that IL-3 helps in regulating the RANKL/OPG ratio, which is disturbed in important skeletal disorders. IL-3 ameliorates degeneration of both articular cartilage and subchondral bone in osteoarthritic mice and also prevents degeneration of human cartilage. Interestingly, IL-3 has immunomodulatory properties and it inhibits the development of pathogenic Th17 cells and increases the number of regulatory T cells in human rheumatoid arthritis model.

Dr. Wani's translational research work has featured in several reputed international journals, and highlighted twice by "Nature Reviews Rheumatology". His innovative multifaceted research programs has led to the potential clinical use IL-3 for the treatment of important skeletal and autoimmune diseases.

**Word count: 230**



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