

# Understanding the fascinating interaction between bone and brain

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"The best news is that the brain has become front and centre in the regulation of bone modelling", conclude authors Professors Paul Dimitri and Cliff Rosen in their concise review of the complex role of the central nervous system in bone metabolism.

The review "The Central Nervous System and Bone Metabolism: An Evolving Story", published in *Calcified Tissue International & Musculoskeletal Research*, shows how our understanding of the control of skeletal metabolism has undergone a dynamic shift in the last two decades, primarily driven by greater understanding of energy metabolism. It also points to future directions and challenges faced by researchers as they try to better understand the complex interaction between the musculoskeletal and central nervous systems.

The authors review the latest research into the role of central regulators of bone metabolism, including leptin, neuropeptide Y (NPY), serotonin, endocannabinoids, cocaine- and amphetamine-regulated transcript (CART), adiponectin, melatonin and neuromedin U. They also discuss the role of the sympathetic and parasympathetic nervous systems in the control of skeletal metabolism, as evidence for the broader autonomic skeletal regulation. Sensory innervation of bone is also a focus, further extending our understanding of the complex neuronal [regulation](#) of bone mass.

Professor Dimitri, Professor of Child Health & Director of Research & Innovation at Sheffield Children's Hospital NHS Foundation Trust, UK

stated:

"Whilst scientific advance in this field of [bone metabolism](#) has been rapid, progress is still required to understand how these model systems work in relation to the numerous and complex factors that influence skeletal metabolism, particularly in humans. Our rapidly evolving understanding of the physiological aspects of bone remodelling together with the development of more sophisticated technology will in time help us to reach this goal."

**More information:** Paul Dimitri et al, The Central Nervous System and Bone Metabolism: An Evolving Story, *Calcified Tissue International* (2016). [DOI: 10.1007/s00223-016-0179-6](https://doi.org/10.1007/s00223-016-0179-6)

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