



Editorial

Osteology as a Forum for Research on the ‘Living Mineral’: Bone

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About 400 million years ago, the first bone-like material, aspidin, was developed for external protection for the body of invertebrate marine creatures; this mineral shell is now believed to function as a reservoir for phosphorous and calcium [1]. Since then, bone has evolved from non-cellular to cellular and into a scaffolding material that serves as the structuring element to shape a wide variety of bodies from fish, amphibians, and reptiles to mammals and birds. Through the course of millions of years of evolution, bones have led animals out of the water and helped them stand, run, and fly.

In primitive human culture, bone remains were used as tools, ornaments, and even currency. To the present day, some cultures remain using teeth for trading. However, our current knowledge allows us to understand bone as a living mineral, capable of constant remodeling, adapting, and hosting in the marrow a most significant part of cell machinery. Over 220 billion new blood cells are produced in bone marrow every day, including monocytes, macrophages, neutrophils, basophils, eosinophils, erythrocytes, dendritic cells, and platelets, as well as T cells, B cells, and natural killer (NK) cells. New discoveries on bone physiology continue to reveal its intricate functionality, such as the trans-cortical vessels, a previously un-noticed circulatory subsystem in bone that is the main conduit for blood and new cell exchange between the bone marrow and the rest of the body [2].

In the journal *Osteology*, we call upon all sciences revolving around the study of bone, from the disciplines of evolution, anthropology, sociology, forensics, and physiology of bone to those related to the medicinal, biophysical, and biomechanical aspects and to materials development. We stand at the doorstep of this new millennium having as many exciting new discoveries as we have new challenges and issues to solve. On the one hand, biocompatible materials [3] and repair procedures for bone [4–6] have been making huge and fast advances in the last decades. On the other, however, unhealthy lifestyles [7], an ageing population [8], genetic disorders, environmental changes, and the emergence of multiresistant pathogens continue to stimulate scientists to find new solutions for osteoporosis, osteoarthritis, bone metabolic diseases [9,10], osteomyelitis, and bone cancer. The forum is open: from basic research to review articles, societal studies, and clinical trial reports, all contributions are welcome.

Funding: The author acknowledges University of Aveiro and FCT/MCTES (Fundação para a Ciência e a Tecnologia, Ministério da Ciência, da Tecnologia e do Ensino Superior) for financial support to LAQV-REQUIMTE (Ref. UIDB/50006/2020) through national funds (PIDDAC) and, where applicable, co-financed by the European Regional Development Fund (FEDER), within the PT2020 Partnership Agreement.

Conflicts of Interest: The author declares no conflict of interest.



Citation: Braga, S.S. Osteology as a Forum for Research on the ‘Living Mineral’: Bone. *Osteology* **2022**, *2*, 137–138. <https://doi.org/10.3390/osteology2030016>

Received: 6 July 2022

Accepted: 26 August 2022

Published: 30 August 2022

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