

**The Ninth International Conference on the Chemistry and Biology of Mineralized Tissue
Summary of Scientific Conference
R13-DE18322-01**

The Ninth International Conference on the Chemistry and Biology of Mineralized Tissue (9ICCBMT) was supported by funds from the National Institute of Dental and Craniofacial Research (NIDCR), the Office of Rare Diseases (ORD), the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and the National Institute of Biomedical Imaging and Bioengineering (NIBIB). The conference was held at the Lakeway Inn Conference Center in Austin, Texas, on November 4-8, 2007. Approximately 160 researchers were in attendance, including 31 junior scientists whose travel was supported by the conference grant from the NIH. There were 50 oral and 60 poster presentations. The meeting, which attracted a multi-disciplinary, international audience, promoted and advanced the exchange of new ideas for the prevention, detection, diagnosis, and treatment of the pathologies associated with mineralized tissue aging and disease.

Mineralized tissues are essential for providing mechanical strength, locomotion, masticatory function, and protection to the body. They are also critical as a source of ions and small molecules and as a scaffold for the subsequent development of additional mineralized tissue, such as the laying down of bone on calcified cartilage. When mineralized tissues are altered, there can be a major disruption in the quality of life of the individual or organism affected. Diseases in which mineral is deposited ectopically also result in detrimental consequences. The purpose of this conference is to present the most recent results of important scientific investigations into incomplete areas of our understanding, predict future directions of subsequent research, and ultimately design improved methods for the diagnosis, treatment and cure of individuals with mineralized tissue-related diseases. Areas covered included new discoveries related to studies of diseases of bones and teeth, the developmental biology of these tissues, the structure and interaction of their individual components, the genes that determine their composition, and the regulatory factors that lead to their expression provide a comprehensive view of how the health of these tissues can be maintained. Presentations also included important lessons learned from studies of calcification in invertebrate species and mutant animals. Specific rare diseases that were discussed included fibrodysplasia ossificans progressiva, osteogenesis and dentinogenesis imperfecta, cherubism and hypophosphatemia. A workshop dedicated to the discussion of bisphosphonate-associated osteonecrosis of the jaw was held. In addition, new mutations mapped on several genes that regulate mineralized tissue physiology and relevant animal models were reported. These new discoveries have significant implications to additional human diseases and disorders.

Scientific data presented at the meeting contribute to the knowledge and basic understanding of the events involved in the formation, maintenance and repair/regeneration of mineralized tissues. This understanding should lead to improved strategies for the prevention and management of mineralized tissue diseases and disorders. The knowledge should also lead to the development of improved biomaterials for dental implants and orthopaedic prostheses and of new tissue-engineered devices for dental and skeletal applications.

The four-day conference culminated in a summary session highlighting newly reported discoveries that lend themselves to opening up the next frontier of mineralized tissue research. The conference organizers received overwhelming and positive feedback from the attendees, with the only caveat that the schedule was rather dense. Proceedings of the conference will be published in a supplement issue of *Cells Tissues Organs* following peer-review of the manuscripts and should be available within the year.