

## DIRECTOR'S NOTES

I want to thank everyone who participated in and attended the June 29, 2007 UAB Center for Metabolic Bone Disease (CMBD) Scientific Symposium on Translational Research in Bone Disease held in conjunction with an External Advisory Committee (EAC) review of the CMBD. Members of the committee were: Thomas A. Einhorn, MD, Boston Medical Center and William V. Giannobile, DDS, MS, DMedSc, Michigan Center for Oral Health Research.

Bone research at UAB will be enhanced by the Department of Biomedical Engineering's recent recruitment of four new Assistant Professors:

**Ho-Wook Jun, PhD**, recruited in 2006 from Rice University. Research interests include tissue regeneration using biomimetic self-assembled nano matrices, stem cells, and drug delivery molecules.

**Yuhua Song, PhD**, recruited in 2006 from Washington University. Research interests include multiscale computational modeling to understand molecular interactions.

**Xincheng Yao, PhD**, recruited in 2007 from Los Alamos and CFS Research Corporation. Research interests include biomedical optics instrumentation, retinal imaging, and biophysical study of neural function.

**W. David Merryman, PhD**, recruited in 2007 from the University of Pittsburg. Research interests include mechanobiology and pathophysiology of cardiovascular tissues, including heart valves.

Below is an overview regarding osteonecrosis of the jaw written by Andrei Barasch, DMD, MDSc, FAAHD, Associate Professor, Department of Diagnostic Sciences, School of Dentistry.

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## OSTEONECROSIS OF THE JAW

Jawbone necrosis is a relatively rare phenomenon, which has been typically encountered in patients with severe malnutrition and disease (e.g. noma oris, AIDS-related necrotizing stomatitis), or after iatrogenic intervention (e.g. osteoradionecrosis in patients treated with ionizing radiation). Preventive and therapeutic advances have significantly reduced the prevalence of these morbid lesions. However, an unusually large number of case reports and case series have recently described what appeared to be either spontaneous or (more commonly) dental procedure-related osteonecrosis of the jaw (ONJ). The one common thread associated with these lesions has been a history of exposure to bisphosphonates; these drugs are potent inhibitors of osteoclast activity and may also have anti-angiogenic properties. However, neither a causal relationship between bisphosphonate use and ONJ, nor a specific mechanism for the necrotizing process, have been established.

The reported prevalence of ONJ depends on the group of patients studied and varies from 0.1 to 22% (*Ann Intern Med* 2006;144:753-61). No prospective data are currently available and the natural history of this disease has not been studied. Nevertheless, the association of ONJ with bisphosphonates appears to be strong and, given the growing number of prescriptions written for these drugs, the number of cases is likely to increase.

At present, UAB is active in three ongoing studies that aim to determine the incidence, risk factors and co-morbid conditions associated with ONJ. The first two are using the network of community dentists and two HMOs enrolled in the NIH-funded Dental Practice-Based Research Network (DPBRN), to identify ONJ cases. The first project will match each case to three controls from the same practice and identify risk factors and co-morbidities, while the second will examine the ONJ-affected population among over four million enrollees in two large HMOs. The third project is undertaken under the auspices of CMBD's Research Core Center grant and will study incidence of, and risk factors for ONJ in the VA and Medicare electronic datasets. We will define temporal and drug type/quantity requirements for development of ONJ as well as test hypotheses including presence of co-morbid and risk factors such as diabetes, cancer, and/or use of corticosteroids.

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