

Military Benefits of Studying Fibrous Dysplasia/McCune-Albright Syndrome (FD/MAS)

An overview prepared by the FD/MAS Alliance

Bone Formation, Healing, and Remodeling

The mutation that causes FD/MAS is located in a very important gene (GNAS) that is necessary for the maintenance of healthy bone. For that reason, the study of FD/MAS has a track record of yielding broad insights into bone biology, like the discovery that bone is the body's source of a key kidney-regulating hormone. FD/MAS provides a unique natural experiment to study key signaling pathways that have implications for treatments of DoD-prevalent conditions, like blast-induced heterotopic ossification, chronic bone pain, skeletal fractures, osteoporosis, and osteoarthritis. Learn more about two of those examples:

Blast-induced Heterotopic Ossification

Heterotopic Ossification (HO) is a condition where bone forms in soft tissue where bone does not normally exist. Studies have found that blast-induced HO affects approximately 65% of combat-wounded warriors, resulting in obstacles to mobility, use of prostheses, recovery, and returns to service. HO can be caused by the inverse of the gene mutation that causes FD/MAS. The study of the basic biology of FD/MAS could increase understanding of HO because FD/MAS is caused by the activating mutation of GNAS and HO can be caused by the inactivating mutation of the very same gene.

Mechanisms of Chronic Bone Pain

Pain often extends well beyond the expected period of healing for an injury. In the midst of the ongoing pain and opioid epidemic, scientists struggle to understand how or why acute pain evolves into chronic pain. Part of the challenge of studying this question is that pain research participants are often only identified once pain is well-underway. People with FD/MAS transition to chronic pain in a predictable time frame, and exhibit both major forms of pain (nociceptive and neuropathic), making this population a convenient sample to track the biochemical, physiological, and neurological emergence of chronic bone pain, from beginning to end.

FD/MAS Alliance thanks Dr. Alison Boyce, Chief Metabolic Bone Disorders Unit, National Institute of Dental and Craniofacial Research, National Institutes of Health for her expertise and time in preparing this document.



FD/MAS Alliance is a community-led 501(c)3 nonprofit that fights back against fibrous dysplasia, McCune-Albright syndrome (FD/MAS). FD/MAS Alliance serves people affected by FD/MAS through programs of research, education, and advocacy.

To learn more, visit fdmasalliance.org