



## Press Release

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### **Biorepository Being Developed to Better Understand Musculoskeletal Conditions in the US Military**

*A MIRROR-supported project, “Gene and Protein Discovery in the Synovial Microenvironment and the Intervertebral Disc Space and Facet Joints of the Spine”, aims to improve readiness and return to duty for warfighters.*

**TACOMA, Wash.** - Researchers with the Musculoskeletal Injury Rehabilitation Research for Operational Readiness (MIRROR) program at Madigan Army Medical Center (Madigan) are developing a biorepository, with the potential to be the most comprehensive musculoskeletal biobank within the Department of Defense (DoD). The MIRROR program is administered by The Geneva Foundation (Geneva), a nonprofit that advances military medicine through research, development, and education.

The biorepository will enhance understanding of the biomolecular changes that occur at the synovial joints and ultimately improve musculoskeletal injury pathophysiology understanding. Leading the project is Principal Investigator Army Lt. Col. Joseph Galvin, DO, FAAOS, MC, an orthopedic surgeon and assistant professor of surgery with Uniformed Services University, associate program director of Orthopaedic Surgery Residency, and director of research at Madigan.

Dr. Galvin and his team consider the establishment of a large-scale biobank as the first step in discovering relevant protein and genetic biomarkers to improve diagnosis, prognosis, treatment, outcome prediction, and return-to-duty rates and times for service members who sustain musculoskeletal injuries (MSKIs).

“Since receiving institutional review board (IRB) approval in March 2022, the Madigan Musculoskeletal Biorepository has collected, processed, and stored 1,011 biologic specimens from active duty patients undergoing arthroscopic and open knee and shoulder surgery,” said Dr. Galvin. “This precision medicine approach has the potential to improve readiness and return to duty for our warfighters who are at the tip of the spear.” He added, “For example, identifying synovial, blood and tissue biomarkers that are diagnostic of connective tissue tears such as labral tears and bone/cartilage loss and injury could lead to earlier diagnosis and monitoring via less invasive methods, aid in provider decision making, as well as reduce costs of care in the Military Health System.”



MSKIs are among the most significant health burdens facing military medicine and are the leading cause of medical discharge, limited duty, and medical non-deployable status. According to the [Military Health System's 2016 Health of the Force Report](#), MSKIs account for over twice the number of lost duty days as eight other top non-readiness categories combined. The unique burden of MSKI in the military and the impact on military readiness highlight the need for focused research to improve outcomes and optimize return-to-duty. This biomarker repository study is one of over 40 MIRROR projects that generate data for treating and preventing these highly prevalent conditions.

The study has been approved for up to 10,000 subjects over 10 years, will include collecting specimens of synovial fluid, plasma, whole blood, and tissue from enrolled participants. Samples will be analyzed with state-of-the-art equipment at Madigan. The biobank data will be integrated with collection of patient-reported outcomes and return to duty data, thereby allowing for a more comprehensive understanding of musculoskeletal conditions.

The research team is currently conducting preliminary analysis, focusing on proteomics, genomics, and transcriptomics. This targeted biomolecular approach may lead to significant advances that will be informative in all manner of musculoskeletal issues that affect service personnel and beneficiaries and put military medicine at the forefront of treating MSKIs. Learn more about MIRROR at [mirrorusuhs.org](http://mirrorusuhs.org).

This study is funded through an award from Uniformed Services University, under Award Number HU00011920011.

*Disclaimer: The views expressed do not reflect the official policy of the Army, the Department of Defense, or the U.S. Government.*

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