Development of a Post-Traumatic Osteoarthritis Model: Studies on the Mechanical and Biochemical Effects of Injury on Cartilage Tissue Analogs

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Problem: Post-Traumatic Osteoarthritis

- Initiated by traumatic injury (risk jumps from 20% to 50%) (Kramer+ 2011)
- Has debilitating effects on patient: pain, loss of motion
- Affects ~ 6 million Americans

Progression of PTOA is rarely linear

Every case and every patient is different

Despite all the research, there is still a need for more information
Solution: An *in vitro* model of PTOA

High throughput mechanical screening (HTMS) device developed by the Mauck lab for cartilage impact studies.

Cartilage Tissue Analogs (CTAs), cartilage surrogates, were used in our three studies.

Pressure loading bioreactor designed by Dodge *et. al.* to model cartilage loading patterns in physiological situations.