Journal of Biomechanical Engineering

Editorial

Journal of Biomechanical Engineering: Legacy Paper 2016

The *Journal of Biomechanical Engineering* has been in continuous production since 1977. To honor papers published at least 30 years ago that have had a long-lasting impact on the field, we present a paper starting from the early years of the journal that has had lasting impact, as assessed by metrics such as the total number of citations accumulated since publication. Looking at the papers from the journal's first 5 years, we are pleased to present the following paper as this year's Legacy Paper:

"*Biphasic Creep and Stress-Relaxation of Articular-Cartilage in Confined Compression: Theory and Experiments*" by V. C. Mow, S. C. Kuei, W. M. Lai, and C. G. Armstrong, ASME J Biomech Eng 102(1): 73–84.

This paper, which now has over 1300 citations, provided a rigorous theoretical basis for analyzing the behavior of hydrated tissues and articular cartilage in particular, in terms of interstitial fluid flow. As such, the paper made not one, but two, important contributions. First, it demonstrated compellingly that, at least under experimental testing conditions, interstitial flow is an important feature of the biomechanical behavior of articular cartilage. Second, the paper brought the ideas of mixture theory, which had emerged in the theoretical mechanics community, to bear on the specific problem of a hydrated, deformable soft tissue, establishing a foundation for research on articular cartilage and other soft tissues. The basic biphasic formulation has since been extended by the original paper's authors and others to address issues, such as nonlinear mechanics, anisotropy, solid-phase viscoelasticity, tissue growth/remodeling, and the effect of charged species, and the word "biphasic" has become commonplace in the language of biomechanics. As a testament to the paper's continuing influence, we note that it was cited 51 times in 2016, by studies in the field of articular cartilage mechanics as well as work in the mechanics of meniscus, intervertebral disk, tumor, and engineered tissues.

