

**Guest Editors:**

Ange-Therese Akono (Northwestern University)

John Brigham (University of Pittsburgh)

Christian Hellmich (Vienna University of Technology)

Dinesh Katti (North Dakota State University)

Kalpana Katti (North Dakota State University)

Stefan Scheiner (Vienna University of Technology)

## Call for Papers

### Special Collection on Mechanobiological Engineering for Health



### Aims & Scope

The term “mechanobiology” features a wide spectrum of processes and phenomena, including both the effects of biological processes on the mechanics of natural systems and the reciprocal change in biological processes due to mechanical signals. As many states of health and therefore also disease are mechanically originated, whether through acute trauma or chronic conditions such as hypertension, the assessment of coupled mechanobiological processes is critical to improving our understanding and ability to maintain the healthy condition. Moreover, the mechanically driven adaptation of biological systems provides invaluable insight into exciting potential pathways to better engineer a wide range of systems, from autonomous robotics to self-healing materials. In an effort to highlight and invigorate the field of mechanics in mechanobiology, this special collection of the Journal of Engineering Mechanics is focused on the use and development of rigorous methods in mechanics applied to engineering problems involving biological systems. Contributions are invited that consider multiple length scales and mechanical and biological processes, with the common theme being the emphasis on fundamental concepts in mechanics.

The collection also includes both meanings of the term “Engineering” as either affecting and/or designing a process through an engineering method and/or the use of engineering tools in the evaluation of mechanobiological processes. Contributions may include development of new mechanical analysis methods for mechanobiological systems, application of mechanics to derive novel information relating to healthy or diseased biological tissues and structures, and/or introduction of novel mechanobiologically inspired engineered systems.

#### Examples include:

- Advancements in theoretical or computational analysis of biological systems and their coupling to biological processes.
- Approaches to estimate mechanical properties of tissues in vivo or in vitro.
- Design/Development of novel testing devices/procedures to evaluate mechanical properties of tissues and/or biological properties affected by mechanical stimuli.

*continued on reverse*

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- Design/Development of engineered tissues or other interventions for improved tissue mechanical performance.
- Mechanistic theories investigating the relationship of the mechanical response of tissues to genetic and other biochemical responses of cells and tissues.
- Applied biomimicry for novel engineered systems based on mechanobiological adaptation.

## Submission Guidelines

We invite Forum articles, Technical Notes, Technical Papers, and Case Studies. Article type descriptions and preparations guidelines can be found in "Publishing in ASCE Journals: A Guide for Authors" (<https://dx.doi.org/10.1061/9780784479018>). The submission deadline for this special collection is March 30, 2024.

Authors should follow the guidelines for ASCE journal submission and submit manuscripts electronically through the journal's Editorial Manager website: <https://www.editorialmanager.com/jrnemeng/>. When submitting, authors should indicate in the submission questions that the paper is being submitted in response to this call for papers ("Mechanobiological Engineering for Health") and the Guest Editor's names (Akono/Brigham/Hellmich/Katti/Katti/Scheiner).

Please note that this is an invitation to submit papers for peer review and does not imply acceptance for publication. Acceptance of submitted papers depends on the results of the normal refereed peer review process of the journal.

All accepted papers submitted through this solicitation will be published in regular issues of the journal as they are accepted, and they will be added to a special online collection (which is similar to a print version of a special issue) and will be indexed for citations like other regular journal papers).