

Editorial

Mechanobiology Journal—Welcome Editorial

Simon C. F. Rawlinson

*Centre for Oral Bioengineering, Institute of Dentistry, Barts & The London School of Medicine & Dentistry, Blizard Building, 4 Newark Street, London E1 2AT, UK
Address correspondence to Simon C. F. Rawlinson, s.c.f.rawlinson@qmul.ac.uk*

Received 4 October 2019; Accepted 4 October 2019

Copyright © 2019 Simon C. F. Rawlinson. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

It is with the greatest pleasure that I have the opportunity to write the first editorial of the *Mechanobiology Journal*. It is hoped that the successful establishment of a journal dedicated to the field of mechanobiology, along with allied areas, will impact on the studies of researchers from other fields in which mechanobiology has not been considered as a regulator of biology in their particular theme. Many cells and tissues are subjected to mechanical forces which will exact a biological response; these can determine cellular behaviour, but will also modulate the response to chemical signalling. Indeed, the reverse can also be true, that is chemical signals influencing the degree of the mechanical response. Dysregulation of either could lead to a disease status.

Mechanobiology refers to the study of how cells, which are subjected to exogenous or endogenous forces in their local environment, transduce these forces into a biological response. Such responses are dependent on a functioning dynamic intracellular 3D cytoskeletal complex and interaction with cell membrane. Implicit with this is a property to sense a changing environment. The primary cilium, a projection originating from a cell, can act as a mechano-sensory organelle. Cell-cell and cell-matrix interactions have a major impact on how cells respond in any given scenario. Mechanical deformation of the cell membrane can activate mechanosensitive channels, and is dependent of the surface on which a cell resides. Can manufactured substrates help to induce a beneficial response? Can we reproduce a mechanobiology-generated response chemically? Thus, with the combination of mechanobiology studies and material sciences, coordinated methodologies can be developed to prevent or combat disease and offer potential clues for regenerative medicine.

Such a dedicated journal will offer space to promote, explore, and exploit the potential of mechanobiology in generating therapeutic outcomes. These will be disseminated to a wider audience, following scrutiny and review from members of the scientific community appreciative of the nuances of the mechanical environment.

The journal will provide a platform for researchers to report findings on biological systems subject to mechanical stimuli, and the integration of chemical, material cues for the greater understanding of human and animal physiology, microbiology, and agriculture, and arboriculture. The journal will not shy from, but will not court, controversy; it will act as a forum for new ideas and will encourage debate. By this mechanism, providing proof to support or refute an argument, qualified progress can be made.

The *Mechanobiology Journal* invites manuscripts from all fields of biology, and indeed materials science, with the condition that the central focus is on biological regulation of cells, tissues, and microbes at the mechanical level. The remit is broad and will also welcome articles covering the development of novel experimental devices to examine cellular behaviour and in silico reports.

Original manuscripts are expected to provide a clear contribution to advances in in silico, in vitro, and in vivo research of mechanobiology. Reviews are encouraged in all areas of mechanobiology and may focus on any topic presented within the scope of the journal. Reviews would be expected to be a comprehensive exposition of the literature, with a critical appraisal of recent work, and insight into future studies, outcomes or concerns.

The Editorial Board will endeavour to assist the promotion of mechanobiology-based discoveries and their integration with animal and plant tissue engineering, therapies, and regenerative medicine. We particularly encourage the submission of articles which have the potential to challenge our understanding of cellular behaviour when mechanobiology is at the forefront of the study.

Simon C. F. Rawlinson
Editor-in-Chief