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*Editorial*

# Scientific progress in biophysics

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In recent years the scientific advance in biophysics is marked by progress in various research approaches and methods including characterization techniques, theoretical and computational modeling, as well as the application of modern approaches of physics to complex biological systems (and processes). More specifically, the innovation in biophysics is stimulated by the cooperation with related areas, such as biochemistry, physiology, molecular and cell/system biology, with a special focus on the study of the relationship between the structure and function at various biological levels.

The Special Issue "*Scientific Progress in Biophysics*" comprises two review articles and two original research papers that provide important example of recent advancements in biophysics.

The article entitled "*The role of postural and plantar pressure asymmetries predicting pain in aging adults*" (by Svitlana Dikhtyarenko et al.), highlights differences in baropodometry and anthropometrics between sexes, with neck deviation and left knee angle identified as predictors of pain levels. Machine learning analysis evidence that neck left deviation and left knee angle were predictive of participants' pain levels. The study, that allows us to identify significant variables in a postural analysis, could play an important role in the improvement of people's quality of life.

The review article entitled "*Quantum computing meets neural excitability: modeling ion channels and action potentials via membrane biophysics*" (by Chitaranjan Mahapatra), evidences how the intersection of quantum computing and membrane biophysics allows to propose innovative quantum algorithms that could revolutionize simulations of ion channel behavior and neuronal signaling. This article evidences how interdisciplinary research work can furnish more efficient and advanced models of neural excitability, by bridging together neuroscience, biophysics, and quantum information science.

The article entitled "*A low-cost stage-top incubation device for live human cell imaging using rapid prototyping methods*" (by Michael Worcester et al.) reports on the production of a do-it-yourself (DIY) device for stage-top incubation with temperature and atmospheric control. The advent of 3D printing technologies may furnish low-cost rapid prototyping approaches with precision comparable to traditional fabrication methods, thus opening the possibility for the in-lab design and production.

The review article entitled: "*Subcutaneous sustained-release drug delivery system for antibodies and proteins*" (by Takayuki Yoshida and Hiroyuki Kojima) discusses the development formulations of drug delivery system (DDS), with particular focus on Subcutaneous (SC) sustained release. The analysis of the biophysical parameters that affect the pharmacokinetics (PK) of SC is an important step for the development and engineering of antibody/protein drugs, especially in view of the reduction of the dosing frequency.

Overall, the collection of the articles published in this Special Issue may help to identify the fundamental factors involved in the development of innovative solutions in some specific Biophysical systems by analyzing the main parameters that sensitively influence the design of bio-prototypes and bio-systems, while putting into evidence challenges, limitations, and emerging approaches of the various fields of biotechnology.

Finally, the Guest Editor would like to sincerely thank all the authors for their valuable contributions.


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