Systems approaches meet biology and physiology: why do we need yet another journal?

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Article

Modern biological science in the past 50 years has made a spectacular journey providing us fascinating insights into the nature of living organisms, and leading to accumulation of incredible amount of information. Nowadays, we observe introduction of the new systems approaches, that allow us to supplement the qualitative nature of the life sciences by quantitative and mechanism-driven analysis [1]. More and more scientists are becoming attracted by the unique opportunities that are provided by the novel synthetic approaches encompassed by the systems biology, systems physiology and systems pharmacology in various fields [2–6]. Right now, it is not simply mathematical or computational modelling of biological systems: a wide range of tools including various approaches from big data field, progressive statistical methods, “omics” and others are used to get insight into the mechanism of health and disease.

On the other hand, although novel systems approaches in biomedicine are powerful tools, their multidisciplinary nature is a challenge to both researchers in this field and readers of their papers. Theoretical and mathematical biology have been sceptically viewed by biologists for a long time, and systems biology these days is in danger of following them.

Therefore, we believe that the corresponding scientific journal niche, although not being exactly vacant, is not represented sufficiently. We feel a need for more in-depth interaction between people focused on specific biologic fields and systems biologists, and we would like to address this in this new journal.

One can say: why do we need yet another journal on in silico-based studies of life sciences? Of course, there is a plethora of respected and acclaimed journals. However, the papers on systems biology published in systems biology journals are often lacking

in depth regarding the specific biological field (be it hematology or signal transduction). Furthermore, the mathematical modelling papers in these journals are often overlooked by the biologists, physicians and researchers in general, whose involvement into the subject of mathematical biology might be less deep. On the other hand, highly professional biological journal in the specific field might have difficulties with proper review of systems-biology-rich papers. Finally, applied mathematics in bio-sciences is quickly emerging and becoming more and more valued, what makes it critical to be aware of the advantages and drawbacks of the novel methods. Thus, our first and most important goal was to create a forum for the in-depth discussions between the physiologists, physicians, biologists, biochemists and biophysicists, mathematicians that would be understandable and meaningful for all these in the field of life sciences.

Our editorial board consists of the professionals combined expertise in the fields of physiology, biology, mathematical sciences, immunology, oncology and, of course, systems biology. The spectrum of scientific sections of our journal includes self-organization at the level of molecules and macromolecular complexes, molecular mechanisms of biochemical reactions; cell signal transduction and metabolic networks, regulation of cell cycle, gene expression and epigenetic regulation; mechanisms of physiological and pathophysiological processes at the levels of cells, tissues, organs and organisms; pharmacological research and diagnostics (as long as they are related to physiological and pathological mechanisms). In order to make this journal accessible and friendly to authors, reviewers, and readers from different fields, we come up with a list of initiatives. Above all, we are convinced, that scientific knowledge should be free of any kinds of paywalls and thus we are open access journal. Furthermore, we also encourage our authors to upload their works to the pre-print services, so, that their work can be

additionally appreciated by the society even prior to publishing. When the review reports would be complete, we would be delighted to publish them alongside the paper, as we wish to make the review process transparent and productive. Finally, we are well aware that review process can be frustrating and exhausting for all the parties involved. Thus, we are keen on implicating the most versatile and effective ideas for scientific reviewing. We provide the two-step reviewing pipeline, that consists of pre-evaluation stage, at which the manuscript is rated based on a set of criteria. Based on the obtained score, our system gives the review type and the number of allowed modifications. We believe this approach would allow to regulate both reviewers' and author's work. We wish to fill the publishing process by enthusiasm and fun, instead of irritation and despair. We encourage authors to provide short popular reviews, so that their works would be better understood by the ones that are not so deeply involved in the field systems biology and systems physiology.

Finally, we wish to broaden scientific knowledge and thus, we are bi-lingual journal: at the moment our basic language is English. However, all of the published works will be translated into Russian to lower the entry barrier for the younger professionals, making their first steps in the field. We also look forward to include other languages with the growth of our journal.

Systems Biology and Physiology Reports (SBPReports) would be published quarterly with its first issue coming in March. We also would be publishing Special Issues

The launch of SBPReports is a milestone for our team and we are fascinated and excited by the opportunities and challenges that await our creation. We are encouraging other scientists to join us in this new undertaking and participate by submitting their outstanding research, making reviews and henceforth contributing the field of systems biology and physiology for the sake of exceeding scientific barriers.

Yours Truly,

SBPReports Editor-in-chief

Mikhail A. Panteleev

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References:

1. Vera J, Lischer C, Nenov M, Nikolov S, Lai X, Eberhardt M. Mathematical Modelling in Biomedicine: A Primer for the Curious and the Skeptic. *Int J Mol Sci* 2021;22. <https://doi.org/10.3390/ijms22020547>.
2. Garcia E, Ly N, Diep JK, Rao GG. Moving from Point-based Analysis to Systems-based modeling: Integration of Knowledge to Address Antimicrobial Resistance against MDR Bacteria. *Clin Pharmacol Ther* 2021. <https://doi.org/10.1002/cpt.2219>.
3. Geng J, Ji B, Li G, López-Isunza F, Nielsen J. CODY enables quantitatively spatiotemporal predictions on in vivo gut microbial variability induced by diet intervention. *Proc Natl Acad Sci U S A* 2021;118. <https://doi.org/10.1073/pnas.2019336118>.
4. Panteleev MA, Andreeva AA, Lobanov AI. Differential Drug Target Selection in Blood Coagulation: What can we get from Computational Systems Biology Models? *Curr Pharm Des* 2020;26:2109–15. <https://doi.org/10.2174/1381612826666200406091807>.
5. Dunster JL, Panteleev MA, Gibbins JM, Sveshnikova AN. Mathematical Techniques for Understanding Platelet Regulation and the Development of New Pharmacological Approaches. *Methods Mol Biol* 2018;1812:255–79. https://doi.org/10.1007/978-1-4939-8585-2_15.
6. Belyaev AV, Dunster JL, Gibbins JM, Panteleev MA, Volpert V. Modeling thrombosis in silico: Frontiers, challenges, unresolved problems and milestones. *Phys Life Rev* 2018;26–27:57–95. <https://doi.org/10.1016/j.plrev.2018.02.005>.