



Biophysical Reviews— 2021, the year that was

Damien Hall^{1,2}

Accepted: 17 November 2021 / Published online: 22 November 2021

© International Union for Pure and Applied Biophysics (IUPAB) and Springer-Verlag GmbH Germany, part of Springer Nature 2021, corrected publication 2021

Abstract

The current issue (volume 13 issue 6, 2021) is a Special Issue jointly dedicated to scientific content presented at the 20th triennial IUPAB Congress that was held in conjunction with both the 45th Annual Meeting of the Brazilian Biophysical Society (Sociedade Brasileira de Biofísica - SBBf) and the 50th Annual Meeting of the Brazilian Society for Biochemistry and Molecular Biology (Sociedade Brasileira de Bioquímica e Biologia Molecular – SBBq). In addition to describing the scientific and nonscientific content arising from the meeting this sub-editorial also provides a look back at some of the high points for *Biophysical Reviews* in the year 2021 before going on to describe a number of matters of interest to readers of the journal in relation to the coming year of 2022.

This Editorial marks the last issue for the journal to be published in 2021 – a year that has been characterized by a mixture of hardship, frustration, and of late, (possibly) a slowly developing cautious optimism in relation to the COVID-19 pandemic. Over the last 2 years, the journal has had to rapidly adapt to suddenly altered plans of contributors, as the publication of scientific reviews and organization of conference-based special issues has necessarily taken a back seat to the realities of altered work practices and, in some cases, changed life and career plans. One such major change was directly concerned with the subject of this special issue (SI) on the scientific content associated with the 20th Congress of the IUPAB (International Union for Pure and Applied Biophysics) conducted in concert with the 45th Annual Meeting of the Brazilian Biophysical Society (SBBf) and the 50th Annual Meeting of the Brazilian Biochemical and Molecular Biology Society (SBBq) (Itri et al. 2021). After discussing a few notable features of the SI, this editorial will introduce important developments occurring with the journal that relate to new feature commentaries and Institutional access arrangements. This Editorial will then close with a look back at some of the standout articles of 2021.

Structure of the IUPAB congress SI

Originally scheduled for 2020, the IUPAB Congress and associated SBBq and SBBf meetings (and the associated SI to be derived from them) were deferred until 2021 due to the emerging pandemic, with the final decision to go ahead with the meeting in a virtual online format not reached until early to mid-2021. While I direct readers to the lead editorial of this issue (Itri et al. 2021) for the particulars of the trials and tribulations associated with organizing both the conference and the associated SI, I note here a few particulars about this special issue that may be instructive to readers contemplating the organization of their own conference-related SI. As for all regular and special issues of *Biophysical Reviews*, the current SI is divided into a front material section and a scientific body section. The SI guest editors have been particularly skillful with regard to both the nature, and the arrangement, of articles recruited to these sections – producing a special issue that genuinely imparts a strong flavor of the event on which it is based.

The front material for this issue is split into two parts – the journal-related process section (Table 1) and the combined congress/symposium event-specific commentaries (Table 2). Notable among the former (Table 1) is the issue lead editorial (Itri et al. 2021) (and subeditorial (Hall 2021a)) and two advisory commentaries, which respectively describe major changes to the publishing procedures of the English language journal of the Biophysical Society of Japan (Nakamura 2021) and a call for contributions to an upcoming SI based on the Russian Photobiology Society

✉ Damien Hall
hall.damien@staff.kanazawa-u.ac.jp;
damienhall30@gmail.com

¹ WPI Nano Life Science Institute, Kanazawa University, Kakumamachi, Kanazawa, Ishikawa 920-1164, Japan

² Department of Applied Physics, Aalto University, FI-00076 Aalto, Finland

Table 1 Articles associated with journal process and future events

Article title	Article type	Reference
A special issue of <i>Biophysical Reviews</i> dedicated to the 20th IUPAB (virtual) Congress “in” Foz do Iguacu	Lead editorial	(Itri et al. 2021)
<i>Biophysical Reviews</i> – what happens next?	Subeditorial	(Hall 2021a)
Announcing changes to the publishing procedures of ‘Biophysics and Physicobiology’ (BPPB) – the Biophysical Society of Japan’s English language biophysics journal	Commentary	(Nakamura 2021)
Call for contributions to the special issue on the 9th Congress of the Russian Photobiological Society held in Shepsi, Krasnodar region, Russia in September 12–19, 2021	Commentary	(Tsygankov et al. 2021)

Table 2 Commentaries associated with persons or session descriptions

Article title	Article type	Reference
<i>Biophysical Reviews</i> ’ “Meet the councilor”—a profile of Anastasia A. Anashkina	Commentary	(Anashkina 2021)
<i>Biophysical Reviews</i> ’ “Meet the councilor series”—a profile of Kandala V. R. Chary	Commentary	(Chary 2021)
<i>Biophysical Reviews</i> ’ “Meet the councilor series”—a brief profile of David J. Crossman	Commentary	(Crossman 2021)
Incoming new IUPAB councilor 2021 - Ana Denicola	Commentary	(Denicola 2021)
Meet the IUPAB councilor-Hans-Joachim Galla	Commentary	(Galla 2021)
Meet the IUPAB councilor – Angela M. Gronenborn	Commentary	(Gronenborn 2021)
<i>Biophysical Reviews</i> ’ “Meet the councilor series”—a profile of Peter Pohl	Commentary	(Pohl 2021)
Incoming new IUPAB councilor 2021 - Gabriella Viero	Commentary	(Viero 2021)
Half a century deciphering membrane structure, dynamics and function – a short description of the life and research of Shirley Schreier.	Commentary	(Schreier 2021)
Women in science symposium	Commentary	(Crossman and Nonato 2021)
Autophagy: mechanisms and applications – a session at the 20th IUPAB Congress/45th SBBF Annual Meeting/50th SBBQ Annual Meeting	Commentary	(Mori 2021)
Highlights of the IUBMB education session at the 20th IUPAB Congress, 45th Annual SBBF Meeting, and 50th Annual SBBq Meeting	Commentary	(Costa et al. 2021)
Overview of the biomolecular association and dynamics session at the 20th IUPAB Congress, 45th Brazilian Congress of SBBF and the 50th Annual Meeting of SBBq	Commentary	(Whitford 2021)
Protein structure, dynamics and function – a 20th IUPAB Congress symposium	Commentary	(Garratt 2021)
IUPAB 2021 Symposium 13: ion channels and membrane transporters	Commentary	(Baenziger et al. 2021)
Translational biophysics – 20th IUPAB Congress session commentary	Commentary	(Perez-Gill and Watts 2021)
Protein folding, misfolding, and un/non-folding: overview of the SP16 Session at the 20th IUPAB Congress, 45th Annual Meeting of SBBf, and 50th Annual Meeting of SBBq	Commentary	(Uversky 2021a)
Microbiomes: human and environmental	Commentary	(Viera 2021)

(Tsygankov et al. 2021). Within the second section are nine short biographies of persons of note among the various societies involved in the three meetings with a particular emphasis on the incoming newly elected IUPAB councilors (Table 2). Also contained within this second section are nine session commentaries that are short two-to-three-page documents (written by the particular session chairpersons) summarizing the session’s thematic topics and providing a short background of the speakers involved. Such session commentaries are a feature of *Biophysical Reviews* SIs, and they provide the best way (short of being there) of understanding what was talked about within the session (Table 2).

The SI Editors have arranged the articles appearing in the scientific body section of this SI (Table 3) in a way meant to first highlight the short scientific commentary and letter

contributions (Tong and Bustamante 2021; Augusto and Truzzi 2021; Ramos et al. 2021; Mello and Wattret 2021; Setubal 2021; Pfeffermann et al. 2021). These short scientific contributions are all easy reads and in general have been recruited from keynote speakers and invited lecturers. Following these scientific “morsels” are thirty “main course” scientific review articles, with the vast majority contributed by invited speakers from the conference (Table 3). Dealing with the range of session topics covered within the IUPAB Congress and associated SBBq and SBBf symposiums, the articles within this collection were all written by senior biophysicists from around the world. There will undoubtedly be much of interest to readers, both within and outside of your principal research themes, contained within this issue’s collection.

Table 3 Scientific commentaries, letters, and reviews

Article title	Article type	Reference
Helical inchworming: a novel translocation mechanism for a ring ATPase	Commentary	(Tong and Bustamante 2021)
Carbon dioxide redox metabolites in oxidative eustress and oxidative distress	Letter	(Augusto and Truzzi 2021)
Langmuir monolayers and proteoliposomes as models of matrix vesicles involved in biomineralization	Letter	(Ramos et al. 2021)
Developing transferable skills through embedding reflection in the science curriculum	Letter	(Mello and Wattret 2021)
Metagenome-assembled genomes: concepts, analogies, and challenges	Letter	(Setubal 2021)
Microbiota and the immune system: how the gut microbiome influences resistance to infection	Commentary	(Vieira 2021)
The energetic barrier to single-file water flow through narrow channels	Letter	(Pfeffermann et al. 2021)
Polymer-based nanoparticles: fabrication to applications. The many faces of DC8,9PC and albumin	Review	(del Valle Alonso and Grasselli 2021)
Location, location, location: subcellular protein partitioning in proteostasis and aging	Review	(Kumar and Lapierre 2021)
Allostery and protein plasticity: the keystones for bacterial signaling and regulation	Review	(Imelio et al. 2021)
Mitophagy mechanisms in neuronal physiology and pathology during aging	Review	(Markaki et al. 2021)
Uncovering the important role of mitochondrial dynamics in oogenesis: impact on fertility and metabolic disorder transmission	Review	(Chiaratti 2021)
Dissecting the molecular mechanisms of mitochondrial import and maturation of peroxiredoxins from yeast and mammalian cells	Review	(Gomes et al. 2021)
Sequence-dependent structural properties of B-DNA: what have we learned in 40 years?	Review	(da Rosa et al. 2021)
Cholesterol-dependent endocytosis of GPCRs: implications in pathophysiology and therapeutics	Review	(Kumar and Chattopadhyay 2021)
Insights into lipid-protein interactions from computer simulations	Review	(Tieleman et al. 2021)
The energetics of subunit rotation in the ribosome	Review	(Hassan et al. 2021)
Many birds with one stone: targeting the (p)ppGpp signaling pathway of bacteria to improve antimicrobial therapy	Review	(Pulschen et al. 2021)
Time-resolved detection of association/dissociation reactions and conformation changes in photosensor proteins for application in optogenetics	Review	(Terazima 2021)
Polymyxins within the <i>E. coli</i> cell envelope: insights from molecular dynamics simulations	Review	(Weerakoon et al. 2021)
Cationic amino acid transporters and their modulation by nitric oxide in cardiac muscle cells	Review	(Daniel Peluffo 2021)
DICER: structure, function and regulation	Review	(Vergani-Junior et al. 2021)
Wavelength, dose, skin type and skin model related radical formation in skin	Review	(Meinke et al. 2021)
Fluorescence nanoscopy at the sub-10 nm scale	Review	(Masullo et al. 2021)
Towards organism-level systems biology by next-generation genetics and whole-organ cell profiling	Review	(Minami et al. 2021)
Protein conformational dynamics and phenotypic switching	Review	(Kulkarni et al. 2021)
Drug discovery in leishmaniasis using protein lipidation as a target	Review	(Brannigan and Wilkinson 2021)
Gliadin proteolytically resistant peptides: the interplay between structure and self-assembly in gluten-related disorders	Review	(Herrera and Doderio 2021)
The protein disorder cycle	Review	(Uversky 2021b)
Cryogenic superresolution correlative light and electron microscopy on the frontier of subcellular imaging	Review	(Tian et al. 2021)
Secondary structure dependence on simulation techniques and force field parameters: from disordered to ordered proteins	Review	(Coskuner-Weber and Caglayan 2021)
Human disease biomarker panels through systems biology	Review	(Smith et al. 2021)
Macromolecular movies, storybooks written by nature	Review	(Schmidt 2021)
Advances in nonlinear optical microscopy techniques for in vivo and in vitro neuroimaging	Review	(Pallen et al. 2021)
Molecular interactions of IRF4 in B cell development and malignancies	Review	(Sundararaj and Casarotto 2021)
Acoustic cavitation-induced shear: a mini-review	Review	(Mondal et al. 2021)
Droplet microfluidic devices for organized stem cell differentiation into germ cells: capabilities and challenges	Review	(Tehrani et al. 2021)

Following the sections which focus on the journal process and special issue-related nonscientific and scientific content, this special issue's arrangement concludes with three supplementary documents that describe meeting abstract and timetabling-related content (Table 4), namely that specify the meeting program (IUPAB Program 2021), the list of speakers' abstracts (IUPAB Speakers 2021), and the list of poster abstracts (IUPAB Posters 2021).

Aside from presenting interesting content, this Issue does an excellent job of highlighting how *Biophysical Reviews* can act as a superior publication vehicle to convey the contents of a meeting and, in addition, act to preserve a record of the meeting within the digital publication realm. With over 62 contributions, this issue is also now the largest of all SIs published by the journal. *Biophysical Reviews* would like to congratulate the SI editors (Itri et al. 2021) for their efforts associated with this Issue.

Matters of interest for the journal's readers

Moving on from the contents of this special issue (more fully covered within the lead editorial (Itri et al. 2021)), I take the opportunity here to mention some matters related to the journal that will be of interest to regular readers and subscribers. First, we discuss next year's lineup before describing some new features of the journal that relate to institutional access agreements and a new type of commentary format.

A hint at next year's lineup After an unsettled last-few years, the scientific community has developed mechanisms (largely online) for coping with uncertainty, becoming more resilient in the process. This resilience has allowed the journal to get back to planning its yearly arrangement of special issues during the prior year. While it is customary to give a full description of the upcoming roster during Issue 1 of each year, here, we provide a hint of the special issues for 2022.

Issue 1 – Special Issue on the Australian Society for Biophysics (Cranfield et al. 2021)

Issue 2 – Regular Issue featuring an Issue Focus on the Costa Rican Biophysical Society (Solís et al. 2021)

Issue 3 – Regular Issue

Issue 4 – Special Issue on the Russian Photobiology Society (Tsygankov et al. 2021)

Issue 5 – Regular Issue featuring an Issue Focus on the life of Prof. Har Gobind Khorana

Issue 6 – Special Issue on computational biophysics and structural biology of proteins – A Special Issue in honor of Prof. Haruki Nakamura's 70th birthday

A particularly interesting aspect of the coming year's lineup is the appearance of the "Regular Issue featuring an Issue Focus" within Issues 3 and 5. More fully described in the editorial for Issue 4 (Hall 2021b), an Issue Focus is a contiguous block of articles within a regular issue that will allow smaller societies (not necessarily able to command the contributions necessary to make a full special issue) to make a "Special Issue *Lite*" (so to speak).

Springer's deal with Australian universities An important feature of the journal is that it operates on a hybrid open-access format, meaning that a free track for publication is available to all authors. However, the other face of the publication coin is access to content by the user. While nearly all *Biophysical Reviews* content is available via Medline Central after a short period of isolation, only the author-paid open-access articles are immediately available for download via the Springer website. While other methods for download of restricted articles are available (such as via the Springer SharedIt program which is heavily exploited by the journal (Hall 2017)); this restriction can nevertheless still pose a barrier to some scientists for very recently published material. A second means for overcoming barriers to access is via a journal subscription, which can be either personal or institutional. For researchers associated with academic centers, large institutional agreements between those centers and the Springer Nature corporation, in which access to a catalog of journals is based on internet domain name recognition, makes journal access seamless for users under that internet domain umbrella. With regard to potential readers of *Biophysical Reviews*, an even more powerful type of institutional agreement has just been reached in Australia and New Zealand between Springer Nature and the Council of Australian University Libraries (CAUL). This agreement will give members of the CAUL consortium the ability to

Table 4 Supplementary content (meeting program and abstracts)

Article Title	Article Type	Reference
20th IUPAB International Congress, 45th SBBf Congress and 50th Annual Meeting of SBBq - program description	Supplement	(IUPAB Program 2021)
20th IUPAB International Congress, 45th SBBf Congress and 50th Annual Meeting of SBBq - speaker abstracts	Supplement	(IUPAB Speakers 2021)
20th IUPAB International Congress, 45th SBBf Congress and 50th Annual Meeting of SBBq - poster abstracts	Supplement	(IUPAB Posters 2021)

automatically publish their research open access within *Biophysical Reviews*, thereby making the content free to any user. Covering all 47 member universities across Australia and New Zealand, with seven external research institutions also participating, this agreement will significantly increase the amount of Australian and New Zealand-funded research immediately available to all from the point of publication, thereby increasing global reach and impact of *Biophysical Reviews*-related content (CAUL-Springer Agreement 2021).

Editor's roundup As part of the ongoing development of the journal, in 2022, *Biophysical Reviews* will introduce a new regular feature called “Editors Roundup” from Issue 2 onward. This will be a recurring commentary piece in which invited journal editors may provide one page of text and 1 or 2 figures describing up to five biophysics-related articles that have recently appeared in their journal and which they feel to be particularly worthy of mention. The principal benefit to *Biophysical Reviews* is that the Editors Roundup commentary will help it to fulfill one important aspect of its IUPAB mandate – that associated with facilitating the promotion and internationalization of biophysical research. The benefit to the contributing journals is that it will allow them to highlight and cite up to five of their recently published articles in a forum with very strong ties to the biophysical community. As *Biophysical Reviews* operates a social media promotion for each issue, the Editors Roundup commentary will also allow a reference to these cited articles to be injected into the social media sphere (from a respected port of authority). As *Biophysical Reviews* operates on a hybrid access system, these Editors Roundup commentary pieces will be published in subscription mode and therefore will not require payment of any page charges. After each Issue deadline, all individual submissions will be collated into a single document, entered into the production cycle, and then sent for proof electronically to each individual author to correct his/her section. Interested biophysics-related journal editors can contact *Biophysical Reviews*' chief editor or executive editors for further discussion as to their potential contribution to the “Editors Roundup” commentary.

A look back at the year that was

In closing out 2021, it may be of interest to the readers of *Biophysical Reviews* to provide a short synopsis of what was published within the journal this year. To do this, I highlight just a few contributions from each issue that illustrate both the wonderfully diverse scientific content and the international nature of the contributors.

Issue 1 The first Issue for the year led with the announcement of the winner of the 2021 Michèle Auger Award for

Young Scientists' Independent Research – Assoc. Prof. Jorge Alegre-Cebollada (Hall 2021c). For those interested, that article also contained a description of the motivation and nomination process for the award. The “Meet the Editor” piece for Issue 1 featured Editorial Board Member Assoc. Prof. Massimo Vassalli – a theoretical physicist who made the transition to biophysics to study cell-based mechanobiology (Vassalli 2021). Of the ten scientific articles published in this issue, I have chosen just four to highlight with these concerning the computer simulation of ionic liquid solvents, published by a group from Italy (Le Donne and Bodo 2021); a review article discussing membrane-directed mechanisms for generating cell polarization, by a group from Germany and Japan (Sackmann and Tanaka 2021); a review article exploring the role of piezoelectric mechanisms in synovial cartilage for generation of an electrical potential upon deformation, by a group composed of members from Ireland, the UK, and the Netherlands (Poillot et al. 2021); and finally, a review article on the production of neural circuits using neurons by a group based in Australia (Daria et al. 2021).

Issue 2 The second Issue for 2021 began with a description of the necessary procedures for initiating a collaboration with the *Biophysical Reviews* journal in order to produce a thematic SI (Hall 2021d). The “Meet the Editors” piece was contributed by Prof. Addmore Shonhai, a Zimbabwean scientist now working in South Africa as a professor (and head) of the Department of Biochemistry at the University of Venda (Shonhai 2021). Of the scientific content articles appearing in this Issue, I would like highlight the following four which involved a scientific letter concerning the use of optical tweezers in a diagnostic assay of sickle cell anemia based on red blood cell plasticity, contributed by a collaborative team of laser physicists and clinicians based in Iran (Mohi et al. 2021); a review article submitted by a team from Germany that explored biophysical methods for characterizing the directed movement of immune cells essential to carrying out their role in “immune surveillance” (Vesperini et al. 2021); a review article by a group from the UK exploring the biophysical and analytical procedures for characterizing the eliciting glycoconjugate antigens used in the development of novel classes of vaccines for enteric bacteria (such as salmonella) (Bazhenova et al. 2021); and finally, a review article by a New Zealand government scientist who discussed molecular biology procedures for engineering protein ligation relays – biochemical pathways in which one protein is attached with extreme specificity to another through a cascade of intermediate shuttle protein reactions (Mabbitt 2021).

Issue 3 The third issue opened with a call for nominations to be made for the “2022 Michèle Auger Award for Young Scientists' Independent Research” prior to October 31st

of 2021 (Hall 2021e). Also contained within this opening piece was a description of the different types of commentary articles available for publication within the journal. The “Meet the Editors” piece for Issue 3 was contributed by Prof. Jeremy Tame who described his journey as a protein crystallographer from the University of Cambridge to Yokohama City University in Japan (Tame 2021). A notable addition to this issue was a commentary contributed by the then president of IUPAB, Prof. Marcelo Morales, who described IUPAB’s achievements during the period of his tenure (Morales 2021). Among the scientific contributions, I highlight the following four: an article by two female physicists from Russia dealing with analytical relations describing the soliton-like relative motion of open “breathing” states in double-stranded DNA (Yakushevich and Krasnobaeva 2021); a contribution from African scientists based in Benin and Morocco dealing with a retrospective analysis of the positional placement of electrodes for the assessment of contractions indicative of imminent childbirth (with a particular emphasis on remote medicine) (Jossou et al. 2021); a review article from researchers jointly located in Greece and the UK discussing the mechanical effects exerted on, and by, cancer cells during their metastatic transition (Vasilaki et al. 2021); and finally, a contribution from a collaborative group of physicists and medical doctors from India who reviewed integrated optical procedures for analyzing the chemical components of saliva which can be used for disease related diagnostic assays (Lukose et al. 2021).

Issue 4 The fourth issue for 2021 began with an introduction of two new executive editors (Prof. Stephen Harding (UK) and Prof. Germàn Rivas (Spain)) and then went on to provide some practical tips to potential reviewers of manuscripts on how to produce a useful and impactful critique (Hall 2021b). The leading scientific content article of Issue 4 was concerned with the nanomechanical effectors of protein structure, contributed by Assoc. Prof. Jorge Alegre-Cebollada, the winner of the 2021 Michèle Auger Award for Young Scientists’ Independent Research (Alegre-Cebollada 2021). The second feature article, submitted by Prof. Toshio Ando of Japan, was the first example of a new type of invited commentary featured by the journal known as the “Biophysical Reviews – Top Five” which describes five canonical scientific articles in the biophysical field in which the author is designated as an expert (in this case – high-speed atomic force microscopy) (Ando 2021). Other highlights of Issue 4 include a submission, by scientists based in Portugal, on a large-scale meta-analysis of a characteristic waveform of electrical contractions preceding childbirth (Russo et al. 2021), a review article by scientists based in Israel and the USA, on computational modeling of Ras-like protein regulation (Nussinov et al. 2021) and an experimental-oriented review article from a scientist located in Japan, exploring

Ras-like proteins involvement in endocytotic vesicle capture (Mima 2021).

Issue 5 This first Special Issue of the year, guest-edited by Dr. Thomas Iskratch and Dr. Pamela Swiatlowska, was concerned with the topic of cardiovascular mechanobiology (Swiatlowska and Iskratsch 2021). The “Meet the Editor” piece for this issue was contributed by Elizabeth Ehler, who after an initial degree in Austria went on to become a professor and a group leader at Kings College London using complex microscopic methods to investigate muscle structure at the cellular and subcellular levels (Ehler 2021). Among the many excellent contributions to this issue, I highlight the commentary by Prof. Mike Sheetz which provides an overview of the mechanobiology viewpoint of heart muscle contraction and regulation (Sheetz 2021). Three other scientific content articles of note are those contributed by a group from Australia examining physical modeling studies of the heart (Nguyen et al. 2021); a group from the USA reviewing computational models of the beating heart (Sharifi et al. 2020), and finally, a group from Singapore examining methods for measuring and mimicking micro to nanoscale features of the cardiac environment (Singh and Young 2021).

Having provided a very brief flavor of the contents of each issue from 2021 (and having described the layout of the current issue earlier in this Editorial) I hope that the reader will discern sufficient interest in the contents of the various issues of 2021 to give each a second look.

Concluding remarks

If you would like to submit an article to *Biophysical Reviews*, you are encouraged to first broach the matter with either the chief editor or executive or editorial board members. Information about the journal is available at its official Springer Nature website and social media pages on Twitter and YouTube.

Web: <https://www.springer.com/journal/12551>

Twitter: @BiophysicalRev1.

YouTube: www.youtube.com/channel/UCzG_5MWmnrB2UBibtxs2DuA

After a discussion concerning the appropriateness of your suggested topic, a general timetable for the submission of your article (usually about 4 to 6 months following the official invitation) will be arranged in conjunction with the professional officers of the journal.

Acknowledgements After a second rough year associated with the pandemic, on behalf of the journal, I would like to acknowledge the hard work of the executive editors, the editorial board members, and the journal-related Springer Nature staff. I would like to thank Dr. Meran Lloyd-Owen and Prof. Adam S. Foster for comments made on

an earlier draft of this manuscript. DH acknowledges funding associated with the receipt of a “Tokunin” Assistant Professorship carried out at the WPI-Center for Nano Life Science, Kanazawa University. DH also acknowledges the University of Aalto for an appointment to their Affiliated Researcher Program carried out within the Department of Applied Physics.

Declarations

Conflict of interest The author declares no competing interests.

References

- Alegre-Cebollada J (2021) Protein nanomechanics in biological context. *Biophys Rev* 13:435–454. <https://doi.org/10.1007/s12551-021-00822-9>
- Anashkina AA (2021) Biophysical Reviews’ “Meet the councilor”—a profile of Anastasia A. Anashkina. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00873-y>
- Ando T (2021) Biophysical reviews top five: atomic force microscopy in biophysics. *Biophys Rev* 13:455–458. <https://doi.org/10.1007/s12551-021-00820-x>
- Augusto O, Truzzi DR (2021) Carbon dioxide redox metabolites in oxidative eustress and oxidative distress. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00860-3>
- Baenziger J, Ananchenko A, Hussein TOK, Mody D (2021) IUPAB 2021 Symposium 13: ion channels and membrane transporters. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00874-x>
- Bazhenova A, Gao F, Bolgiano B, Harding SE (2021) Glycoconjugate vaccines against salmonella enterica serovars and Shigella species: existing and emerging methods for their analysis. *Biophys Rev* 13:221–246. <https://doi.org/10.1007/s12551-021-00791-z>
- Brannigan JA, Wilkinson AJ (2021) Drug discovery in leishmaniasis using protein lipidation as a target. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00855-0>
- CAUL-Springer Agreement (2021) https://group.springernature.com/group/media/press-releases/springer-nature-and-caul-announce-new-partnership/19771480#_ftn1
- Chary KVC (2021) Biophysical Reviews’ “Meet the councilor series”—a profile of Kandala V. R. Chary. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00898-3>
- Chiaratti MR (2021) Uncovering the important role of mitochondrial dynamics in oogenesis: impact on fertility and metabolic disorder transmission. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00891-w>
- Coskuner-Weber O, Caglayan SI (2021) Secondary structure dependence on simulation techniques and force field parameters: from disordered to ordered proteins. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00850-5>
- Costa MC, Trindade VMT, Dolan E, Mello LV (2021) Highlights of the IUBMB education session at the 20th IUPAB Congress, 45th Annual SBBf Meeting, and 50th Annual SBBq Meeting. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00887-6>
- Cranfield C, Whelan D, Cox C, Shearwin K, Ho J, Allen T, Shibuya R, Hibino E, Hayashi K, dos Remedios C, Li A (2021) *Biophys Rev* 13:485–486. <https://doi.org/10.1007/s12551-021-00813-w>
- Crossman DJ (2021) Biophysical Reviews’ “Meet the councillor series”—a brief profile of David J. Crossman. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00880-z>
- Crossman DJ, Nonato MC (2021) Women in science symposium. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00881-y>
- da Rosa G, Grille L, Calzada V, Ahmad K, Pablo J, Federica A, Bayarri BG, Bishop T, Carloni P, Cheatham III, T, Collepardo-Guevara R, Czub J, Espinosa JR, Galindo-Murillo R, Harris SA, Hospital A, Laughton C, Maddocks J, Noy A, Orozco M, Pasi M, Perez A, Petkevičiūtė D, Sharma R, Sun R, Dans PD (2021) Sequence-dependent structural properties of B-DNA: what have we learned in 40 years? *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00893-8>
- Daria VR, Castañares ML, Bachor HA (2021) Spatio-temporal parameters for optical probing of neuronal activity. *Biophys Rev* 13:13–33. <https://doi.org/10.1007/s12551-021-00780-2>
- del Valle Alonso S, Grasselli M (2021) Polymer-based nanoparticles: fabrication to applications. the many faces of DC8,9PC and albumin. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00872-z>
- Denicola A (2021) Incoming new IUPAB councilor 2021 - Ana Denicola. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00901-x>
- Ehler E (2021) Biophysical reviews “meet the editor series”—Elisabeth Ehler. *Biophys Rev* 13:579–581. <https://doi.org/10.1007/s12551-021-00830-9>
- Galla H-J (2021) Meet the IUPAB Councilor-Hans-Joachim Galla. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00879-6>
- Garratt RC (2021) Protein structure, dynamics and function – a 20th IUPAB Congress symposium. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00889-4>
- Gomes F, Turano H, Ramos A, de Barros MH, Haddad LA, Netto L (2021) Dissecting the molecular mechanisms of mitochondrial import and maturation of peroxiredoxins from yeast and mammalian cells. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00899-2>
- Gronenborn A. (2021) Meet the IUPAB councilor – Angela M. Gronenborn. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00886-7>
- Hall D (2017) Innovations in publication: free sharing of all biophysical reviews’ content. *Biophys Rev* 9:67–68. <https://doi.org/10.1007/s12551-017-0253-y>
- Hall D (2021a) Biophysical Reviews – What comes next? *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s1255-021-00917-3>
- Hall D (2021b) Biophysical reviews—providing an effective critique. *Biophys Rev* 13:427–434. <https://doi.org/10.1007/s12551-021-00824-7>
- Hall D (2021c) Biophysical reviews—the IUPAB journal tasked with advancing biophysics. *Biophys Rev* 13:1–6. <https://doi.org/10.1007/s12551-021-00788-8>
- Hall D (2021d) Biophysical reviews: slowly getting back to ‘normal’? *Biophys Rev* 13:161–165. <https://doi.org/10.1007/s12551-021-00797-7>
- Hall D (2021e) Biophysical reviews—a call to young biophysicists. *Biophys Rev* 13:289–294. <https://doi.org/10.1007/s12551-021-00810-z>
- Hassan A, Byju S, Whitford PC (2021) The energetics of subunit rotation in the ribosome. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00877-8>
- Herrera MG, Doderio VI (2021) Gliadin proteolytic resistant peptides: the interplay between structure and self-assembly in gluten-related disorders. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00856-z>
- Imelio JA, Trajtenberg F, Buschiazzi A (2021) Allostery and protein plasticity: the keystones for bacterial signaling and regulation. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00892-9>

- Itri R, Baptista M, Costa-Filho AJ, Garratt RC (2021) A special issue of *Biophysical Reviews* dedicated to the 20th IUPAB (virtual) Congress “in” Foz do Iguaçu. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00844-3>
- IUPAB Poster Abstracts (2021) 20th IUPAB International Congress, 45th SBBF Congress and 50th Annual Meeting of SBBq - poster abstracts. <https://doi.org/10.1007/s12551-021-00844-3>
- IUPAB Program Description (2021) 20th IUPAB International Congress, 45th SBBF Congress and 50th Annual Meeting of SBBq - program description. <https://doi.org/10.1007/s12551-021-00843-4>
- IUPAB Speakers Abstracts. (2021) 20th IUPAB International Congress, 45th SBBF Congress and 50th Annual Meeting of SBBq - speaker abstracts. <https://doi.org/10.1007/s12551-021-00845-2>
- Jossou TR, Et-tahir A, Tahori Z, El Ouadi A, Medenou D, Bybi A, Fagbemi L, Sbihi M, Piaggio D (2021) Electrodes in external electrohysterography: a systematic literature review. *Biophys Rev* 13:405–415. <https://doi.org/10.1007/s12551-021-00805-w>
- Kulkarni P, Achuthan S, Bhattacharya S, Jolly MK, Kotnala S, Leite VBP, Mohanty A, Orban J, Roy S, Rangarajan G, Salgia R (2021) Protein conformational dynamics and phenotypic switching. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00858-x>
- Kumar GA, Chattopadhyay A (2021) Cholesterol-dependent endocytosis of GPCRs: implications in pathophysiology and therapeutics. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00878-7>
- Kumar AV, Lapierre LR (2021) Location, location, location: subcellular protein partitioning in proteostasis and aging. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00890-x>
- Le Donne A, Bodo E (2021) Cholinium amino acid-based ionic liquids. *Biophys Rev* 13:147–160. <https://doi.org/10.1007/s12551-021-00782-0>
- Lukose J, Sanoop PM, Mithun N, Barik AK, Pai KM, Unnikrishnan VK, George SD, Kartha VB, Chidangil S (2021) Photonics of human saliva: potential optical methods for the screening of abnormal health conditions and infections. *Biophys Rev* 13:359–385. <https://doi.org/10.1007/s12551-021-00807-8>
- Mabbutt PD (2021) Tools for the discovery of biopolymer producing cysteine relays. *Biophys Rev* 13:247–258. <https://doi.org/10.1007/s12551-021-00792-y>
- Markaki M, Tsagkari D, Tavernarakis N (2021) Mitophagy mechanisms in neuronal physiology and pathology during ageing. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00894-7>
- Masullo LA, Szalai AM, Lopez LF, Stefani FD (2021) Fluorescence nanoscopy at the sub-10 nm scale. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00864-z>
- Meinke MC, Busch L, Lohan SB (2021) Wavelength, dose, skin type and skin model related radical formation in skin. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00863-0>
- Mello LV, Wattret G (2021) Developing transferable skills through embedding reflection in the science curriculum. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00852-3>
- Mima J (2021) Self-assemblies of Rab-and Arf-family small GTPases on lipid bilayers in membrane tethering. *Biophys Rev* 13:531–539
- Minami Y, Yuan Y, Ueda HR (2021) Towards organism-level systems biology by next-generation genetics and whole-organ cell profiling. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00859-w>
- Mohi SM, Saadon HL, Khalaf AA (2021) Laser tweezers as a biophotonic tool to investigate the efficacy of living sickle red blood cells in response to optical deformation. *Biophys Rev* 13:173–184. <https://doi.org/10.1007/s12551-021-00790-0>
- Mondal J, Lakkaraju R, Ghosh P, Ashokkumar M (2021) Acoustic cavitation-induced shear: a mini-review. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00896-5>
- Morales MM (2021) IUPAB—serving the international biophysics community. *Biophys Rev* 13:303–305. <https://doi.org/10.1007/s12551-021-00802-z>
- Mori M (2021) Autophagy: mechanisms and applications – a session at the 20th IUPAB Congress/ 45th SBBF Annual Meeting/ 50th SBBQ Annual Meeting. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00888-5>
- Nakamura H (2021) Announcing changes to the publishing procedures of ‘Biophysics and Physicobiology’ (BPPB) – the Biophysical Society of Japan’s English language biophysics journal. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00882-x>
- Nguyen N, Thurgood P, Sekar NC, Chen S, Pirogova E, Peter K, Baratchi S, Khoshmanesh K (2021) Microfluidic models of the human circulatory system: versatile platforms for exploring mechanobiology and disease modelling. *Biophys Rev* 13:769–786. <https://doi.org/10.1007/s12551-021-00815-8>
- Nussinov R, Zhang M, Maloney R, Jang H (2021) Ras isoform-specific expression, chromatin accessibility, and signaling. *Biophys Rev* 13:489–505. <https://doi.org/10.1007/s12551-021-00817-6>
- Pallen S, Shetty Y, Das S, Vaz JM, Mazumder N (2021) Advances in nonlinear optical microscopy techniques for in vivo and in vitro neuroimaging. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00832-7>
- Peluffo RD (2021) Cationic amino acid transporters and their modulation by nitric oxide in cardiac muscle cells. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00870-1>
- Perez-Gill J, Watts A (2021) Translational Biophysics – 20th IUPAB Congress Session Commentary. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00867-w>
- Pfeffermann J, Goessweiner-Mohr N, Pohl P (2021) The energetic barrier to single-file water flow through narrow channels. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00875-w>
- Pohl P (2021) Biophysical Reviews' "Meet the councilor series" – a profile of Peter Pohl. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00897-4>
- Poillot P, Le Maitre CL, Huyghe JM (2021) The strain-generated electrical potential in cartilaginous tissues: a role for piezoelectricity. *Biophys Rev* 13:91–100. <https://doi.org/10.1007/s12551-021-00779-9>
- Pulschen AA, Fernandes AZN, Cunha AF, Sastre DE, Matsuguma BE, Filho FG (2021) Many birds with one stone: targeting the (p) ppGpp signaling pathway of bacteria to improve antimicrobial therapy. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00895-6>
- Ramos AP, Bolean M, Cruz MAE, Andrilli LHS, Nogueira LFB, Sebinelli HG, dos Santos ALN, Favarin BZ, Macedo JMM, Veschi EA, Ferreira CR, Millán JL, Bottini M, Ciancaglini P (2021) Langmuir monolayers and proteoliposomes as models of matrix vesicles involved in biomineralization. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00866-x>
- Russo S, Batista A, Esgalhado F, dos Reis CRP, Serrano F, Vassilenko V, Ortigueira M (2021) Alvarez waves in pregnancy: a comprehensive review. *Biophys Rev* 13:563–574. <https://doi.org/10.1007/s12551-021-00818-5>
- Sackmann E, Tanaka M (2021) Critical role of lipid membranes in polarization and migration of cells: a biophysical view. *Biophys Rev* 13:123–138. <https://doi.org/10.1007/s12551-021-00781-1>
- Schmidt M (2021) Macromolecular movies, storybooks written by nature. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00846-1>
- Schreier S (2021) Half a century deciphering membrane structure, dynamics and function – a short description of the life and research of Shirley Schreier. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00904-8>

- Setubal JC (2021) Metagenome-assembled genomes: concepts, analogies, and challenges. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00865-y>
- Sharifi H, Mann CK, Rockward AL, Mehri M, Mojumder J, Lee LC, Campbell KS, Wenk JF (2020) Multiscale simulations of left ventricular growth and remodeling. *Biophys Rev* 13:729–746. <https://doi.org/10.1007/s12551-021-00826-5>
- Sheetz M (2021) Mechanobiology in cardiac mechanics. *Biophys Rev* 13:583–585. <https://doi.org/10.1007/s12551-021-00827-4>
- Shonhai A (2021) Biophysical reviews meet the editor series—Addmore Shonhai. *Biophys Rev* 13:167–169. <https://doi.org/10.1007/s12551-021-00794-w>
- Singh JP, Young JL (2021) The cardiac nanoenvironment: form and function at the nanoscale. *Biophys Rev* 13:625–636. <https://doi.org/10.1007/s12551-021-00834-5>
- Smith BJ, Silva-Costa LC, Martins-de-Souza D (2021) Human disease biomarker panels through systems biology. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00849-y>
- Solís C, Chaves G, Rodriguez-Corrales JA (2021) Announcing the call for the issue focus on the 2nd Costa Rican biophysics symposium—virtual meeting, march 2021. *Biophys Rev* 13:487–488. <https://doi.org/10.1007/s12551-021-00816-7>
- Sundararaj S, Casarotto MG (2021) Molecular interactions of IRF4 in B cell development and malignancies. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00825-6>
- Swiatlowska P, Iskratsch T (2021) Cardiovascular mechanobiology—a special issue to look at the state of the art and the newest insights into the role of mechanical forces in cardiovascular development, physiology and disease. *Biophys Rev* 13:575–577. <https://doi.org/10.1007/s12551-021-00842-5>
- Tame JRH (2021) Biophysical reviews ‘meet the editor series’—Jeremy R. H. Tame. *Biophys Rev* 13:295–301. <https://doi.org/10.1007/s12551-021-00798-6>
- Tehrani RSH, Hajari MA, Ghorbaninejad Z, Esfandiari F (2021) Droplet microfluidic devices for organized stem cell differentiation into germ cells: capabilities and challenges. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00907-5>
- Terazima M (2021) Time-resolved detection of association/dissociation reactions and conformation changes in photosensor proteins for application in optogenetics. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00868-9>
- Tian B, Xu X, Xue Y, Ji W, Xu T (2021) Cryogenic super-resolution correlative light and electron microscopy on the frontier of subcellular imaging. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00851-4>
- Tieleman DP, Sejdiu BI, Cino EA, Smith P, Barreto-Ojeda E, Khan HF, Corradi V (2021) Insights into lipid-protein interactions from computer simulations. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00876-9>
- Tong A, Bustamante C (2021) Helical inchworming: a novel translocation mechanism for a ring ATPase. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00883-w>
- Tsygankov A, Rubin A, Tuchin V, Riznichenko G, Solovchenko A (2021) Call for contributions to the special issue on the 9th Congress of the Russian Photobiological Society held in Shepsi, Krasnodar region, Russia in September 12–19, 2021. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00905-7>
- Uversky VN (2021a) Protein folding, misfolding, and un/non-folding: overview of the SP16 Session at the 20th IUPAB Congress, 45th Annual Meeting of SBBf, and 50th Annual Meeting of SBBq. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00885-8>
- Uversky VN (2021b) The protein disorder cycle. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00853-2>
- Vasilaki D, Bakopoulou A, Tsouknidas A, Johnstone E, Michalakis K (2021) Biophysical interactions between components of the tumor microenvironment promote metastasis. *Biophys Rev* 13:339–357. <https://doi.org/10.1007/s12551-021-00811-y>
- Vassalli M (2021) Meet the editor series—Massimo Vassalli. *Biophys Rev* 13:7–10. <https://doi.org/10.1007/s12551-021-00786-w>
- Vergani-Junior CA, Tonon-da-Silva G, Inan MD, Mori M (2021) DICER: structure, function and regulation. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00902-w>
- Vesperini D, Montalvo G, Qu B, Lautenschläger F (2021) Characterization of immune cell migration using microfabrication. *Biophys Rev* 13:185–202. <https://doi.org/10.1007/s12551-021-00787-9>
- Vieira LQ (2021) Microbiota and the immune system: how the gut microbiome influences resistance to infection. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00906-6>
- Viera LQ (2021) Microbiomes: human and environmental. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00908-4>
- Viero G (2021) Incoming new IUPAB councilor 2021 - Gabriella Viero. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00861-2>
- Weerakoon D, Petrov K, Pedebos C, Khalid S (2021) Polymyxins within the *E. coli* cell envelope: insights from molecular dynamics simulations. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00869-8>
- Whitford PC (2021) Overview of the biomolecular association and dynamics session at the 20th IUPAB Congress, 45th Brazilian Congress of SBBF and the 50th Annual Meeting of SBBq. *Biophys Rev* 13 Current Issue. <https://doi.org/10.1007/s12551-021-00884-9>
- Yakushevich LV, Krasnobaeva LA (2021) Ideas and methods of nonlinear mathematics and theoretical physics in DNA science: the McLaughlin-Scott equation and its application to study the DNA open state dynamics. *Biophys Rev* 13:315–338. <https://doi.org/10.1007/s12551-021-00801-0>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.