



Biophysical Reviews: from the umbra of 2020–2021 into the antumbra of 2022

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Abstract

This sub-Editorial for Volume 14 Issue 1 (2022) first makes comment on the current issue and then describes matters of interest related to the journal's activities in 2022—chief among which are (i.) the announcement of the winner of the 2022 Michèle Auger Award for Young Scientists' Independent Research, (ii.) an outline of this year's finalized Special Issue (SI) lineup, (iii.) a description of a new production service offered by Springer to those submitting to the *Biophysical Reviews* journal, and (iv.) an introduction of newly appointed members of the *Biophysical Reviews*' Editorial Board.

While the current world situation is still somewhat bleak there are signs that as we move further on from the point of its initial outbreak, humanity's relationship with the SARS-CoV-2 virus is beginning to change from one of pandemic crisis, to the more familiar situation of endemic management, able to be countered through the application of best clinical practice and public health measures. Time will tell if this assessment is true and whether, or not, 2022 proves to be the year from which we collectively begin to emerge from the shadow cast by the COVID-19 outbreak. Nevertheless, irrespective of what may happen, the journal, like all other institutions, has a job to get on with, and the opening of 2022 represents an excellent opportunity for clearly restating what that job is.

What is the job of *Biophysical Reviews*?

Publishing its first article in 2009, the “*Biophysical Reviews*” journal was created by the International Union for Pure and Applied Biophysics (IUPAB) [Morales 2021;

IUPAB 2022] to assist in furthering its philanthropic goals. Created in partnership with the Springer-Nature Corporation, the mandated aims of *Biophysical Reviews* are as follows.

- (i) Publish timely and critical review articles on the topic of biophysics by recognized experts in the field
- (ii) Assist with the development and publication of biophysics-related research across all areas of the world
- (iii) Promote and advocate for the internationalization of biophysical research
- (iv) Act as a secondary source of revenue for IUPAB (alternative to funds raised through IUPAB membership fees)

Like its fellow international unions for chemistry (IUPAC) and physics (IUPAP), IUPAB is a non-profit affiliate of the International Science Council (ISC)—the world's largest non-governmental body for science policy advocacy [ISC 2022]. In this Editorial, we describe the activities of *Biophysical Reviews* in 2022, initially beginning with a short precis of the current issue.

SI on the Australian Society for Biophysics

The current issue focusing on the Australian Society for Biophysics (ASB) [dos Remedios et al. 2022] is the second Special Issue (SI) in the *Biophysical Reviews* national biophysical society partnership program series [Hall 2020a]. The aim of these national society themed SIs is to bring

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to the front a particular country's biophysical society—describing the structure of the organization, their outreach activities, and the types of research they specialize in along with the opportunities (and mechanisms) available for collaboration. With the first national biophysical society feature SI being delivered by one of the world's largest and oldest societies, the Biophysical Society of Japan (BSJ) [Komatsuzaki et al. 2020; Harada 2020], the current SI feature on the ASB provides a window into the workings of a smaller society but one that consistently punches well above its weight [dos Remedios et al. 2022; Hill 2022]. While I refer the reader to the Issue Editorial for a more complete description of the issue contents, it is worth pointing out here the balance of Commentaries, Letters, and Reviews appearing in the current issue (Table 1). As can be seen, the ASB SI is divided into two major sections, a front section containing Editorials, Commentaries, and Letters, and the main scientific body section, containing short and long format review articles. Within the front section, following the lead Editorial [dos Remedios et al. 2022] are two particularly notable contributions, a Commentary from the society President, Dr. Adam Hill, describing the nature and constitution of the ASB [Hill 2022], and a short Letter, from Prof. Boris Martinac,¹ describing some additional historical context to this year's Nobel Prize in Physiology and Medicine, awarded to Prof. Ardem Patapoutian for his discovery of Piezo 1 and 2 mechanosensitive ion channels [Martinac 2022]. In the main body of the SI (Table 1), the SI Editors have collectively assembled over twenty-five review articles grouped into the following five themes which reflect particular research strengths and interests within the ASB membership,

- (i) Advanced bioimaging and spectroscopy
- (ii) Next generation sequencing
- (iii) Membrane proteins and receptors
- (iv) Cancer structural biology
- (v) Cardiovascular and muscle physiology

On behalf of the journal, I would like to thank the contributors and also congratulate the SI Guest Editors (Charles Cranfield, Donna Whelan, Charles Cox, Keith Shearwin, Joshua Ho, Toby Allen, Risa Shibuya, Emi Hibino, Kumiko Hayashi, Cristobal dos Remedios, and Amy Li) for their efforts in assembling this interesting line up of articles, and by doing so, providing insight into the workings of the Australian Society for Biophysics.

¹ A truly pioneering scientists within the mechanosensitive ion channel field.

Michèle Auger Award Winner

In late 2018, Prof. Michèle Auger, a long-time and well-respected member of the *Biophysical Reviews* Editorial Board, sadly lost her fight against cancer. More can be read about the life and research of Prof. Auger in the following obituary published in the IUPAB newsletter [IUPAB 2019]. At the 2019 Editorial board meeting, the journal initiated an award to honor her service and perpetuate the memory of her association with *Biophysical Reviews*. The award was also designed to promote her interest in recognizing and inspiring younger scientists. Titled “The Michèle Auger Award for Young Scientists’ Independent Research,” this award is now in its third year of operation [Hall 2020b; 2021a]. Candidates for the award, who must be younger than 40 years of age at the time of the October 31st nomination deadline, may either self-nominate or be nominated by an interested colleague. Details for submission are provided in each year’s Issue 3 of *Biophysical Reviews* (released in June, e.g., see [Hall 2020c; 2021b]) with this call for submission marking the opening of the award for that year. Designed to be the least (personally) onerous and demanding of awards, nominated candidates are only required to provide a one-page curriculum vitae along with their five best papers. All candidates have their papers and c.v. read by a minimum of eight judges from a pool of 15 total. Judges are selected from senior members of the international biophysics community with all judges being at the head of laboratory/head of institute level. Judges are requested to make their assessment based on the following three criteria (a) independence, (b) originality, and (c) excellence. For each candidate, a simple average of all judge scores was taken with uncertainty in the scoring indicated as a standard error. The 2022 Award received 17 nominations in total with the ordinal ranking of the average score for each candidate displayed in Fig. 1. As can be seen this year’s award was again very tight with some common degree of overlap among the error envelope seen for the top four candidates. Despite the closeness of the scores, in the absence of a numerical tie, there can only be one winner. And with the preceding description as prolog, it is with great pleasure that we announce the winner of the 2022 Michèle Auger Award for Young Scientists’ Independent Research as Assoc. Prof. Miho Yanagisawa of the University of Tokyo. Specializing in intersectional research involving the application of soft matter physics concepts (polymer and phase behavior) to in vitro biophysical experiments pitched at the level of artificial cells, Miho’s research theme is aimed at developing fundamental principles which govern cell organization and behavior. More about her research can be read at her laboratory websites.

Table 1 Contributions to the Special Issue on the Australian Society for Biophysics (ASB) 2022

Articles divided by section	Article type	Reference
Front matter material		
A Special Issue of the Australian Society for Biophysics	Editorial	[dos Remedios et al. 2022]
Biophysical Reviews: from the umbra of 2020–2021 into the antumbra of 2022	Editorial	[Hall 2022]
Biophysics in the time of COVID	Commentary	[Hill 2022]
2021 Nobel Prize for Mechanosensory Transduction	Letter	[Martinac 2022]
Biophysical Reviews Special Issue call: Computational biophysics and structural biology of proteins—A Special Issue in honor of Prof. Haruki Nakamura's 70 th birthday	Commentary	[Basu et al. 2022]
Applications of advanced imaging and spectroscopy		
Recent advances in the standardization of fluorescence microscopy for quantitative image analysis	Review	[Sasaki 2022]
Insights into HIV uncoating from single-particle imaging techniques	Review	[Zhang et al. 2022]
Opto-thermal technologies for microscopic analysis of cellular temperature-sensing systems	Review	[Oyama et al. 2022]
Characterizing conformational ensembles of multi-domain proteins using anisotropic paramagnetic NMR restraints	Review	[Hou and Tochio 2022]
NMR spectroscopy of lipidic cubic phases	Review	[Rajput et al. 2022]
Next generation sequencing		
Dissecting cricket genomes for the advancement of entomology and entomophagy	Review	[Kataoka et al. 2022]
DNA sequencing: an overview of solid-state and biological nanopore-based methods	Review	[Mohammadi and Bavi 2022]
Membrane proteins and receptors		
Model architectures for bacterial membranes	Review	[Carey et al. 2022]
Lipid-mediated antimicrobial resistance: a phantom menace or a new hope?	Review	[MacDermott-Opeskin, et al. 2022]
The interaction of steroids with phospholipid bilayers and membrane	Review	[Crowley et al. 2022]
Aquaporin ion conductance properties defined by membrane environment, protein structure, and cell physiology	Review	[Henderson et al. 2022]
A biophysical perspective of the regulatory mechanisms of ezrin/radixin/moesin proteins	Review	[Senju and Tsai 2022]
Computational studies of Piezo1 yield insights into key lipid–protein interactions, channel activation, and agonist binding	Review	[Lin et al. 2022]
Characteristic structural difference between inactive and active states of orexin 2 receptor determined using molecular dynamics simulations	Review	[Yokoi and Mitsutake 2022]
Structural biology of cell surface receptors implicated in Alzheimer's disease	Review	[Hermans et al. 2022]
How plants solubilize seed fats: revisiting oleosin structure and function to inform commercial applications	Review	[Board et al. 2022]
Cancer therapeutic targets		
Potential of rescue and reactivation of tumor suppressor p53 for cancer therapy	Review	[Hibino and Hiroaki 2022]
Urokinase plasminogen activator as an anti-metastasis target: inhibitor design principles, recent amiloride derivatives, and issues with human/mouse species selectivity	Review	[El Salamouni et al. 2022]
Metamorphosis of prostate specific membrane antigen (PSMA) inhibitors	Review	[Nikfariam et al. 2022]
Gold-based hybrid nanostructures: more than just a pretty face for combinational cancer therapy	Review	[Khafaji et al. 2022]
Cardiovascular and muscle physiology		
Fibrosis and impaired Ca ²⁺ signaling in heart failure	Commentary	[Crossman 2022]
The function and regulation of calsequestrin-2: implications in calcium-mediated arrhythmias	Review	[Sibbles et al. 2022]
Metabolic and electrolyte abnormalities as risk factors in drug-induced long QT syndrome	Review	[Tebay et al. 2022]
Peripartum cardiomyopathy: a global effort to find the cause and cure for the rare and little understood disease	Review	[Li et al. 2022]
A bibliometric review of peripartum cardiomyopathy compared to other cardiomyopathies using artificial intelligence and machine learning	Review	[Grosser et al. 2022]
Paradoxes of Hymenoptera flight muscles, extreme machines	Review	[Hickey et al. 2022]

Fig. 1 Results of the 2022 Michèle Auger Award for Young Scientists' Independent Research. Ordinal ranking of the nominated candidates with the judges' scoring presented in the form of an average plus or minus one standard error. Congratulations to this year's winner – Assoc. Prof. Miho Yanagisawa of the University of Tokyo

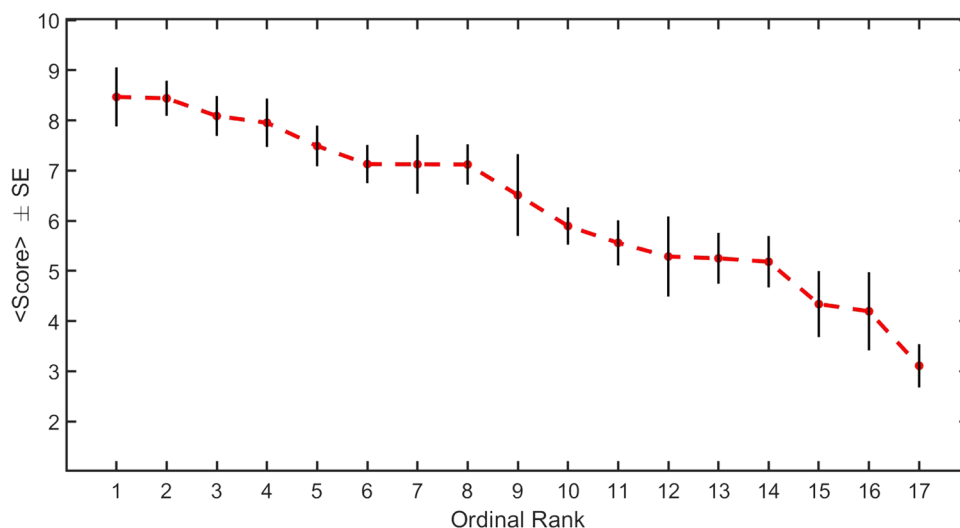


Table 2 The current and prior winners of the Michèle Auger Award for Young Scientists' Independent Research

Year of award	Name of award recipient	Laboratory website
2022	Assoc. Prof. Miho Yanagisawa University of Tokyo, Japan	https://www.c.u-tokyo.ac.jp/info/research/faculty/list/mds/mds-bs/f021974.html https://sites.google.com/g.ecc.u-tokyo.ac.jp/yanagisawa-lab/
2021	Assoc. Prof. Jorge Alegre-Cebollada CNIC, Spain	https://www.cnic.es/en/investigacion/molecular-mechanics-cardiovascular-system [Alegre-Cebollada 2021]
2020	Assoc. Prof. Alexandra Zidovska New York University, USA	https://as.nyu.edu/content/nyu-as/as/faculty/alexandra-zidovska.html [Zidovska 2020]

Website: Assoc. Prof. Miho Yanagisawa
<https://www.c.u-tokyo.ac.jp/info/research/faculty/list/mds/mds-bs/f021974.html>
<https://sites.google.com/g.ecc.u-tokyo.ac.jp/yanagisawa-lab/>

As the 2022 recipient, Associate Prof. Yanagisawa will receive a personalized crystal plaque, a complimentary subscription to the journal and a fully paid gold open access payment to cover the costs of publishing a review article based on her research theme, to be published in the 2022 October Issue of *Biophysical Reviews* (Issue 5). Miho's details along with previous winners of the award in 2021 (Assoc. Prof. Jorge Alegre-Cebollada) and 2020 (Assoc. Prof. Alexandra Zidovska) can be found in Table 2.

On behalf of the journal, I would like to offer special thanks to the fifteen judges who committed to providing their time over the two-month period of November and December. I would also like to thank those scientists who took the time to nominate a junior colleague. In the often self-absorbed and self-promotional world of research, this ability to step outside of one's own career goals and ambitions, to recognize and promote junior talent, is absolutely essential for maintaining and perpetuating healthy structures in science. Importantly, a special thanks, on behalf of the journal, is also given to all participants of this year's award cycle. Judges were asked to mark across the full scale with some candidates being pipped by others simply due to the strictures of the judging requirements (e.g., independence). While there

can only be one winner, participation in the award process is, by design, meant to be a positive experience for all candidates. In this regard, all nominees have had their papers and c.v.'s carefully read by a large number of very senior biophysical scientists, with all nominees rated as good or better by the judging panel. Such exposure, involving the circulation of one's research work among such an eminent circle of readers, is an excellent way of advertising your research progress.

The call for nominations for the 2023 Michèle Auger Award for Young Scientists' Independent Research will be released in the *Biophysical Reviews*' 2022 June Issue. We ask interested parties to invest some time into thinking who they may like to nominate for the next year's award.

Finalized Special Issue line-up for 2022

Each year, the journal receives proposals from guest editorial teams for the production of "Special Issues" which consist of a set of related review articles linked by a single-thematic topic. These themed collections can take the form of either a Special Issue (a whole Issue dedicated to a single topic) or an Issue Focus (five or more articles appearing as a contiguous block within a regular Issue). With the release of an announcement-style Commentary in the current Issue describing the final SI for 2022 on the topic of "Computational biophysics

Table 3 *Biophysical Reviews* Issue structure for 2022

Issue type and theme	Special issue guest editors	Published synopsis/lead contact
Issue 1: special issue “The Australian Society for Biophysics”	Charles Cranfield—University of Technology Sydney, Australia Donna Whelan—La Trobe University, Australia Charles Cox—Victor Chang Cardiac Research Institute, Australia Keith Shearwin—The University of Adelaide, Australia Joshua Ho—University of Hong Kong, Hong Kong Toby Allen—RMIT University, Australia Risa Shibuya—AIST, Japan Emi Hibino—Nagoya University, Japan Kumiko Hayashi—Tohoku University, Japan Cristobal dos Remedios—VCCRI, Australia Amy Li—La Trobe University, Australia	[Cranfield et al. 2021] Contact: Dr. Amy Li Email: Amy.Li@latrobe.edu.au
Issue 2: regular issue with issue focus on “Costa Rican Biophysical Society”	Gustavo Chaves—Institute of Physiology, Pathophysiology and Biophysics, Klinikum Nürnberg Medical School, Germany José Rodríguez-Corrales—Universidad Nacional de Costa Rica, Costa Rica Christopher Solis—The University of Illinois at Chicago, USA	[Solis et al. 2021] Contact: Dr. Gustavo Chaves Email: Gustavo.Chaves@klinikum-nuernberg.de
Issue 3: regular issue	N/A	N/A
Issue 4: special issue “Congress of the Russian Biophysical Society”	Anatoly Tsygankov—Russian Academy of Sciences, Russia Andrew Rubin—Lomonosov Moscow State University, Russia Valery Tuchin—Saratov State University, Russia Galina Riznichenko—Lomonosov Moscow State University, Russia Alexei Solovchenko—Lomonosov Moscow State University, Russia	[Tsygankov et al. 2021] Contact: Dr. Anatoly Tsygankov Email: ttt-00@mail.ru
Issue 5: regular issue with issue focus on “Celebrating the works of Har Gobind Khorana – 100 th anniversary of his birth”	Gopala Krishna—Indian Institute of Technology Madras, India N.R. Jagannathan—Chettinad Academy of Research & Education, India	Contact: Dr. Gopala Krishna Email: agk@iitm.ac.in
Issue 6: special issue “Computational biophysics and structural biology of proteins – Haruki Nakamura 70 th birthday”	Gautam Basu—Department of Biophysics, Bose Institute, India Damien Hall—Nano Life Science Institute Kanazawa University, Japan Nobutoshi Ito—Medical Research Institute, Tokyo Medical and Dental University (TMDU), Japan	[Basu et al. 2022] Email: gautam@jcbse.ac.in

and structural biology of proteins—A Special Issue in Honor of Prof. Haruki Nakamura's 70th birthday” [Basu et al. 2022], this year's Special Issue line-up is now set. The Issue structure for 2022 is provided in Table 3.

Those wishing to use *Biophysical Reviews* as a vehicle to drive the publication of their own SI or Issue Focus for 2023 are asked to contact either the Chief Editor or one of the seven Executive Editors for further discussions (generally, discussions should begin more than a year in advance). The senior editorial members of the journal can be contacted by email as follows.

Damien Hall (Chief Editor)
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 Rosangela Itri (Executive Editor)
 University of São Paulo, Brazil
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New services offered to authors

As of 2022, *Biophysical Reviews* has joined the Springer-Nature/Research Square “In Review” service [IR Springer-Nature 2022] which offers authors the ability to both, create a preprint of their submitted work (replete with a DOI), and then share that preprint via the preprint server’s in house file transfer protocol system. The “In Review” site can also be used to track the progress of their submitted manuscript through the review process and also promote their newly accepted manuscripts via an email alert and sharing system built into the site. Participation with the system is voluntary and all coauthors must agree prior to a preprint being created on the Research Square server prior to this action being processed. More can be read about the “In Review” service by clicking on the website link associated with the following reference [IR Springer-Nature 2022].

Announcing new editorial board members

As an organization engaged in the conveyance of information between humans, the *Biophysical Reviews* journal is only as good as the members it is composed of. In this

spirit, *Biophysical Reviews* would like to thank both the existing members and the following new members (shown in bold in Table 4) of the Editorial Board for kindly donating their time in service of the journal. The very recent addition of nominated editorial board members from India (A. Chattopadathy), England (T. Iskratch), and Australia (F. Braet), along with a number of automatic appointments to the Editorial Board due to their election as IUPAB councilors from Russia (A.A. Anashkina), Argentina (G. Amodeo), Australia (M. Baker), New Zealand (D. Crossman), Germany (H.J. Galla), USA (A.M. Gronenborn), Japan (T. Nishizaka), France (C. Sizun), Italy (C. Viero), and the UK (A. Watts), will undoubtedly help *Biophysical Reviews* in its ongoing quest to provide service to the international biophysics community.

Concluding remarks

Those interested in submitting an article to *Biophysical Reviews* should discuss the matter with either the Chief Editor or a close by Executive or Editorial Board Member. More 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 establishing 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.

Table 4 *Biophysical Reviews* Editorial Board for 2022

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Damien Hall

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Cristobal dos Remedios

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Centro de Investigaciones Biológicas -CIB, CSIC

Table 4 (continued)**Special issue guest editors 2022****Australian Society for Biophysics (SI – Issue 1)**

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 Charles Cox—Victor Chang Cardiac Research Institute, Australia
 Keith Shearwin—The University of Adelaide, Australia
 Joshua Ho—University of Hong Kong, Hong Kong
 Toby Allen—RMIT University, Australia
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 Kumiko Hayashi—Tohoku University, Japan
 Cristobal dos Remedios—Victor Chang Cardiac Research Institute, Australia
 Amy Li—La Trobe University, Australia

Costa Rican Biophysical Society (IF – Issue 2)

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 José Rodríguez-Corrales—Universidad Nacional de Costa Rica, Costa Rica
 Christopher Solis—The University of Illinois at Chicago, USA

Congress of the Russian Photobiological Society (SI – Issue 4)

Anatoly Tsygankov—Institute of Basic Biological Problems of Russian Academy of Sciences, Russia
 Andrew Rubin—Lomonosov Moscow State University, Russia
 Valery Tuchin—Saratov State University, Russia
 Galina Riznichenko—Lomonosov Moscow State University, Russia
 Alexei Solovchenko—Lomonosov Moscow State University, Russia

Celebrating the works of Prof. Har Gobind Khorana—100th anniversary of his birth (IF – Issue 5)

Gopala Krishna—Indian Institute of Technology Madras, India
 N.R. Jagannathan—Chettinad Academy of Research & Education, India

Computational biophysics and structural biology of proteins—Haruki Nakamura's 70th birthday (SI – Issue 6)

Gautam Basu—Department of Biophysics, Bose Institute, India
 Damien Hall—Nano Life Science Institute Kanazawa University, Japan
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K. Gehmlich	University of Birmingham, England

Table 4 (continued)

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M. Williams	Massey University, New Zealand
G.J.L. Wuite	VU University Amsterdam, The Netherlands
K. Yasuda	Waseda University, Japan
B. Zapotoczny	Institute of Nuclear Physics, Polish Academy of Sciences, Poland
A. Zidovska	New York University, USA
G. Zucchelli	Università degli Studi di Milano, Italy

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Declarations

Conflict of interest The author declares no competing interests.

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