



IUPAB—serving the international biophysics community

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Abstract

I have been invited, in my role as President of the International Union for Pure and Applied Biophysics, to provide a brief description of the activities of IUPAB and my own scientific journey.

Role and structure of IUPAB

The International Union for Pure and Applied Biophysics (IUPAB) was first established in 1961 in Stockholm. As an international body, organized under the governance of the International Science Council (ISC), the mandated objectives of IUPAB are two-fold.

- (i) Organize and facilitate international cooperation in biophysics
- (ii) Promote communication between all societies that are interested in any and all aspects of the advancement of biophysics

To carry out these objectives, IUPAB has been constitutionally delegated the authority (through the ISC) to perform the following activities:

- Set up commissions/bodies for special purposes
- Organize international meetings/conferences
- Collaborate with other scientific organizations
- Act in all ways as a constituent Union of the International Science Council in accordance with the Statutes of that body
- Develop any activity deemed helpful to the advancement of its declared objectives

As an organization, IUPAB is composed of an Executive Body and a Scientific Council. Members of the Council are

first nominated by the various affiliated national bodies and then selected on the basis of a vote usually carried out at the IUPAB International Congress held on a triennial basis. The IUPAB Council consists of 17 members with each member playing two important roles. The first role is the advice and consent role with Council Members voting on initiatives put forth at IUPAB Council Meetings. The second role is to act as a conduit/advocate for promoting initiatives/raising issues of importance from their own geographical areas. Five members of the council constitute the IUPAB Executive which is made up of three elected positions, President, Secretary General, and Treasurer, with nominees for these positions typically coming from previously serving Council Members. For continuity purposes, the Immediate Past President and the Future President Elect are also included in the executive decision-making team. Executive members typically serve a period of 3 years with an exception made for the Secretary General who is elected to serve two consecutive 3-year terms. Due to the pandemic in 2020, a 1-year extension has been made for each elected member.

Practically speaking IUPAB generates funds to carry out its initiatives in two ways, the first being from annual membership fees of the various fifty affiliated national bodies that belong to it and the second involving revenue raised from subscriptions to the IUPAB journal *Biophysical Reviews*. As a non-profit organization (run by elected members on an entirely unpaid basis), IUPAB uses these monies to provide seed funding for biophysics-related meetings, acting as a supporting partner or sponsor of various individual countries national society initiatives, running various international awards and prizes, sponsoring travel awards to conferences for students, and running an international biophysics meeting (IUPAB Congress) every 3 years. Perhaps the most important role of IUPAB is that it constitutes a unique forum that is able to deliver scientific advocacy at the international level, giving expert opinion to argue the case for scientific investment to

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national and international science bodies. Applications for IUPAB funding, sponsorship, or advocacy services can be made by directly writing to the IUPAB Secretary General.

Since my election as IUPAB President in 2017, my principal role has been to provide clear direction for the Union in guiding its response to the globalization of science with a heavy emphasis placed on consultation with IUPAB members and regional biophysical associations. Despite the complications arising from the COVID-19 pandemic, I list here some of the major activities carried out by IUPAB during the last 4 years of my tenure:

- Additional resources were directed to improving and increasing the sponsorship of scientific events (workshops and biophysical schools), especially in regions with the greatest lack of attention to science education. Special attention went to students from Latin America, Asia, Eastern Europe, and Africa.
- Attention to IUPAB's finances with optimization of processes that provided us with a volume of comfortable financial resources for future strategic actions, mainly those of capacity building in biophysics—update and modernization of IUPAB's operation with change of the Statutes and Rules of Procedures to permit virtual General Assemblies and online votes to elect IUPAB Officers and Councilors, as well as online executive actions.
- Greater interaction of IUPAB with the public through actions on social networks, proposals for online courses, as well as web conferences on strategic topics in biophysics.
- Increased visibility of IUPAB, through Sponsorship of Plenary Lectures in major biophysics meetings. Sponsorship of a prize for communications made by students or young biophysicists. Sponsorship of awards for seniors and young biophysicists as well as for students are also part of our strategy.
- IUPAB's involvement in open science discussions, in line with UNESCO's recommendations for more inclusive and transparent science—in line with the Chief Editor of Biophysical Reviews (Scientific IUPAB Journal), as well as with Springer, we paid full attention to improving the number and quality of publications, which has seen the journal develop into one of the quality venues for publication in the field of biophysics.
- Articulations with the local Brazilian organization for the organization of the 20th IUPAB congress that will be organized in a virtual and inclusive format, bringing the opportunity of greater visibility for the union and greater impact of scientific discussion.
- Close consultations with the organizers of the 2023 IUPAB Congress to be held in Kyoto (postponed to 2024) and start of actions for receiving proposals for holding the IUPAB Congress in 2027.

A brief description of my scientific journey

My involvement with biophysics dates back to my graduation in medicine, a doctorate in biophysics, and also my internship and postdoc at the Johns Hopkins University working with gene therapy, where my knowledge in biophysics was put into practice working with research involving nanoparticles as a carrier of therapeutic genes for the respiratory tract (Abreu et al. 2011; da Silva et al. 2017). Throughout this period, I also had the privilege of leading the Brazilian Biophysics Society (founded in 1936 - SBBf) as President, getting involved also with the foundation of the Latin American Federation of Biophysical Societies (LAFeBS). During this period, I had the opportunity to be elected to the IUPAB Council for two terms, and in that period, we were able to make a decisive contribution to the promotion of education in biophysics with the foundation of the Latin American Postgraduate Studies in Biophysics (POSLATAM), which has continued through to the present day with substantial training of human resources in biophysics, an important area of interdisciplinary knowledge. POSLATAM's annual courses have contributed to biophysics education outside the borders of Latin America, having also assisted in the training of many attending African students. None of these achievements would have been possible without the teamwork of the biophysics collaborators within Latin America and the many biophysical societies of this region. Activities such as those just described, during my period as an IUPAB Council Member, provided the IUPAB Council sufficient confidence to elect me as President of this important institution, and I will be eternally grateful for this opportunity. One of my major aims during my period as President has been to engender, both in spirit and in practice, a consultative framework in the IUPAB decision-making process. Together, with the Executive and Council Members, IUPAB has strived to build on the past successes, forever mindful of the potential impact and perception of future initiatives.

Concluding remarks

In closing I would like to highlight that in 2021, we will have the 20th International Congress of IUPAB. This 20th IUPAB Congress has been organized in conjunction with annual meetings of the Brazilian Biophysical Society (SBBf) and the Brazilian Society for Biochemistry and Molecular Biology (SBBq). Adopting an online presentation format, this year's IUPAB Congress promises some of the very highest caliber of scientists as speakers and provides new routes for student and audience participation. This 20th IUPAB Congress constitutes a great opportunity for IUPAB's core goals of contributing to international scientific discussion and education in biophysics. Special thanks to the outstanding

scientists Rosangela Itri and Mauricio Baptista, Chairs of the 2020 Congress in Brazil!

To conclude, as the President of IUPAB, I would like to take this opportunity to express my sincere appreciation to all members of the union for their continued efforts under difficult circumstances. A critical function of IUPAB is to act a nexus point for scientific networking, exchanging lessons learned and identifying best practices and priorities for the development of world biophysics. We could never have achieved the level of success that we have during the last 4 years (and especially through 2020) without the integrated action of IUPAB Executive Members who have worked in a very professional and fraternal manner doing an outstanding job. Special thanks to Juan Carmelo Gómez-Fernández (Secretary General), John Baenziger (Treasurer), Zihe Rao (Past President), and Manuel Prieto the (President Elect). In passing on the role of President to Manuel later this year, I do so with the knowledge that IUPAB will be in good hands under his stewardship.

I would like to thank the various IUPAB bodies and the eminent contributing scientists who have collectively helped in making progress. I am especially grateful to the entire

biophysics community for the trust that they have placed in me over the last 4 years.

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Declarations

Conflict of interest The author declares no competing interests.

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