

# **International Union of Pure and Applied Biophysics**

## **Activities' Report - Year 2020**

**Delegate: Michael Pusch**

### **1. Introduction**

2020 has been deeply affected by the Covid-19 pandemic and the scientific activities including those of IUPAB have been severely compromised as all aspects of the society. However, like a magnifying glass, the pandemic has made evident that no single country alone is able to successfully combat the crisis but that countries have to collaborate. The pandemic has also shown once again that a scientific approach is mandatory for fighting and overcoming the critical situation. Biophysical aspects are in the front line of obtaining insight into the mechanisms of disease, for example by determination of 3D structures of viral proteins or by studying possible ion conducting properties of these proteins. Also the formulation of lipid nanoparticles employed in RNA bases vaccines involves biophysical methods of analysis.

In that sense, the continued collaboration of the Italian Biophysical Community, represented by CNR and the Italian Society for Pure and Applied Biophysics (SIBPA) with the European Biophysical Societies' Association (EBSA) and the International Union of Pure and Applied Biophysics (IUPAB) is of clear importance.

### **2. Main activities carried on by IUPAB during 2020 relevant for Italy and for CNR**

Initially associated with the 2020 IUPAB Congress, the IUPAB executive committee had established new awards. One is sponsored by Avanti Polar Lipids Inc. for outstanding contributions to any theme within the field of biophysics without age limit. The second is the IUPAB Young Investigators Prize and will be given to a young investigator for outstanding contributions to the field of biophysics. The deadline for application to the Avanti-IUPAB Prize and to the IUPAB Young Investigator Prize had been postponed until March 15th, 2020. The prizes have then been awarded even though the congress could not be held. The first edition of the Avanti Polar Lipids-IUPAB Medal and Prize was awarded to Prof. Anthony Watts for his pioneering contributions to biophysical research on membranes especially with the use of novel NMR techniques. The first Edition of the IUPAB Young Investigator Medal and Prize has been awarded to Dr Yoav Shechtman for his continuous attempt to develop new imaging tools for higher and higher resolution and applications in Biophysics. These prizes will be presented to the winners during the 2021 IUPAB Congress.

The IUPAB Council has revised IUPAB funding policies for IUPAB Congresses, IUPAB Focused Meetings, Workshops in which IUPAB (or a Task Forces) is the main sponsor, and also for Sponsorship of events in which IUPAB is not the main sponsor, as well as IUPAB Plenary Lectures at different meetings and congresses.

Biophysical Reviews is the Journal specifically associated with IUPAB. Following the resignation of the former Editor IUPAB appointed Dr Damien Hall as new Editor. Biophysical Reviews is a Q1 ranked online journal that publishes topical review articles in all areas of biophysics. Biophysical Reviews has an equitable costing structure and offers supporting IUPAB workshops to publish their contributions.

IUPAB initiated sponsorship of a prize for communications made by students or young biophysicists. Societies of countries linked to IUPAB as Adhering Bodies may apply for this prize to be awarded to presentations made by young biophysicists during meetings of these societies. The prize could also be given during meetings of associations of young biophysicists (<http://iupab.org/sponsorship-policy/>).

IUPAB also provides sponsorship of Plenary Lectures in major biophysics meetings and conferences. IUPAB will sponsor plenary lectures in major meetings or congresses of biophysics like those of EBSA (Europe), ABA (Asia-Pacific), Biophysical Society and LAFéBS (Latin American countries).

The president of the International Science Council (ISC), Daya Reddy, presented the Council's work in a letter to IUPAB. In particular he described the ISC's Action Plan 2019 – 2021, that continues to form the basis of ISC's project work. The Action Plan represents an ambitious program of much-needed initiatives that will position the ISC as an impactful global voice for science in four domains: The 2030 Agenda for Sustainable Development; The Digital Revolution; Science in Policy and Public Discourse; The Evolution of Science and Science Systems.

IUPAB promoted the new educational journal "The Biophysicist: A New Journal Focusing on Research and Experiences in Biophysics Education" published by the Biophysical Society. The journal could become a precious resource for biophysical education worldwide.

The most important change of events is that due to the Covid-19 global pandemic, the IUPAB Congress that should have been held in 2020 in Brazil, has been postponed to October 2021. As a consequence of this also the call for bursaries to attend the Congress has been cancelled. Another consequence was that the deadline to submit a bid to organize the 2026 IUPAB Congress was extended until May 1st, 2021.

Another consequence of the postponement of the Congress is that the General Assembly of IUPAB cannot be held until 2021. According to Article V of the Statutes and Rules of Procedure: "The work of the Union shall be directed by the General Assembly of delegates, which shall normally meet once every three years". To prevent future similar problems the Executive Committee proposed a change of the Statutes and Rules of Procedures to permit virtual General Assemblies and online votes to elect IUPAB representatives.

In addition, the two IUPAB Focused Meetings due for 2021, to be held in India and in Canada, have been postponed to 2022. In the same way the IUPAB 2023 Congress due to be held in Kyoto in June 2023 is postponed to similar dates but of 2024.

### **3. Activities carried on by the delegate within the Union during 2020 and impact on the Italian scientific community**

One of the few in person events held in 2020 was the XXIV International School of Pure and Applied Biophysics, Venice (Italy), 17-31 January 2020, held in Venice at the Palazzo Loredan was headed by Paolo Mariani, Maria Grazia Ortore and Francesco Spinozzi all from Università Politecnica delle Marche. The school was promoted by IUPAB. The 2020 edition of the school was focused on applications of X-rays and neutron scattering in biology.

In 2020, contributions to the 24th national meeting of SIBPA have been published in a virtual special issue of Biophysical Chemistry, with the support of Editor Enrico Di Cera and the organizational contribution of Carlo Musio, Daniela Giacomazza and Cristiano Viappiani of SIBPA. Not less than 20 articles of excellent quality appear in the issue (<https://www.sciencedirect.com/journal/biophysical-chemistry/special-issue/10ZJWWK8DSC> ).

Current IUPAB council member Dr. Giuseppe Zucchelli from the Biophysics Institute (Milan), together with Prof. Robert Jennings, are editing a special issue of the journal Entropy on the topic "Thermodynamics of life: cells, organisms and evolution". The editors state that "Many have suggested, and continue to suggest, that the ever-increasing complexity and thermodynamic 'order' creation, in apparent violation of the Second Law, may place life outside the bounds of physics as we know it. It is the purpose of the present Special Issue to oppose this view and to present the many and varied approaches that physics uses to come to terms with this fundamental question." This topic is at the very heart of the approach that biophysicists apply to study biological mechanisms.

Sibpa offered 5 bursaries to participate at the "Biophysical Society Virtual Annual Meeting" February 22-26, 2021.

The following events have been postponed to a later date or held online:

The 5th Symposium on Nanoengineering for Mechanobiology, March 22nd - 25th, 2020, Camogli, Genova, Italy, organized by Massimo Vassalli.

The joined congress of SIBPA (Italian Society for Pure and Applied Biophysics) with SIFB (Italian Society for Photobiology) planned to be held in Parma from 7-9 July 2020. The postponement of the Sibpa meeting implied that also the assembly of the society and election of officers, treasurer and delegates had to be postponed. This raised the necessity to change the statute of the society in order to be prepared for

such extraordinary conditions in the future. The change was planned to be voted in a special online meeting of the society members in 2021.

The foreseen Febs / Embo lecture course “Ion channels and transporters”, initially to be held 17-23 May 2020 has been postponed to 2022.

The 25<sup>th</sup> international school for pure and applied biophysics, co-funded by IUPAB, originally planned to be held in Venice from 17 to 22 January, 2021, on “Quantitative analysis of optical imaging for Medicine and Biophysics: foundations, applications and perspectives” will be offered online.

#### **4. Conclusions**

The current pandemic shows that international relationships are more important than ever. We are planning to maintain the presence of Italian council members after Dr. Giuseppe Zucchelli from the CNR Biophysics Institute (IBF, Milan section), cannot be elected again as member of the council of IUPAB at the next IUPAB meeting.

Signature

A handwritten signature in blue ink, appearing to read 'Michael Buser', is positioned below the 'Signature' label.

Genova, May 7, 2021