

# International Union of Pure and Applied Biophysics

## Activities' Report - Year 2021

**Delegate: Michael Pusch**

### 1. Introduction

2021 continued to be severely affected by the Covid-19 pandemic. However, using the online meeting software that has been developed during the pandemic, most IUPAB activities could be executed in a satisfactory manner as outlined below. Again, the pandemic underscored that international collaboration is becoming ever important in an increasingly complex world. In addition, it has become very clear that for the major threats of humanity that include for example climate change and pandemics such as those caused by SARS-CoV-2, political decisions need to be taken at an international level and necessitate a strong scientific basis. In this regard, as outlined in more detail below, IUPAB is pushing for an increase of involvement of the Council of Science in the United Nations.

In particular regarding the pandemic, various mechanistic aspects of Covid virus infection have been revealed using biophysical approaches for example by cryo-electron microscopy, a technique that has seen tremendous technical improvements in the last years with contribution of biophysicists around the world. Thus, the international integration of Italy in the biophysical community via IUPAB continues to be vital.

### 2. Main activities carried on by IUPAB during 2021 relevant for Italy and for CNR

The 20th IUPAB congress that was to be held in 2020 in Foz do Iguazu (Brazil) was one of the scientific meetings that had been postponed due to the pandemic. The two IUPAB Focused Meetings due for 2021, to be held in India and in Canada, were postponed to 2022 and in the same way the 2023 Congress due to be held in Kyoto in June 2023 was postponed to similar dates but of 2024.

Another consequence of the postponement of the Congress was that the General Assembly was not held in 2020. To prevent future similar problems for the Executive Committee and the Council, a change of the Statutes and Rules of Procedures to permit virtual General Assemblies and online votes to elect IUPAB officers and councilors was proposed. This General Assembly was held during February-March 2021, and new Statutes and Rules of Procedure of IUPAB were approved. The new text is available on the IUPAB website and tries to accommodate to the new situations that we are finding nowadays.

IUPAB reminded that its sponsoring policies have recently changed. The new modalities are sponsorship of a prize for communications made by students or young biophysicists and sponsorship of plenary lectures in major biophysics meetings and conferences.

The Italian scientist Dr. Giulia Paci, who received her degree in physics from University of Bologna, obtained the IUPAB prize for the best communication at the 60 British Biophysical Conference. She is interested in understanding the interplay between mechanical forces and molecular processes across biological scales.

An important aspect of IUPAB policies that will see considerable engagement of IUPAB in the coming years regards the involvement of IUPAB in the International Science Council (ISC) and the its role in the United Nations Educational, Scientific and Cultural Organization (UNESCO). On 20 September 2020 UNESCO released a recommendation on Open Science, which was then adopted by the General Conference of UNESCO in November 2021 (<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>). Citing just a small part of the preamble reveals the scope of this important initiative:

“Recognizing the urgency of addressing complex and interconnected environmental, social and economic challenges for the people and the planet, including poverty, health issues, access to education, rising inequalities and disparities of opportunity, increasing science, technology and innovation gaps,

natural resource depletion, loss of biodiversity, land degradation, climate change, natural and human-made disasters, spiralling conflicts and related humanitarian crises, ...". IUPAB is actively supporting the initiative to foster the role of ISC at UNESCO.

During the first week of September it was confirmed by online vote of the delegates that the venue for the IUPAB 2027 IUPAB Congress will be Berlin (Germany) and the organizers made a presentation during the 2021 IUPAB virtual Congress.

The 20th IUPAB congress was held on October 4th-8th 2021 in a virtual format. 10 key note speakers, two of them Nobel prize winners, and 24 symposia covered a wide range of interests in biophysics and biochemistry. Over 80 speakers (29 from North America, 27 from Europe, 23 from South America, 8 from Asia, Oceania and Middle East) from all continents (24 countries) in a male:female rate of ~ 2:1 delivered their virtual lectures.

With resources provided directly from IUPAB, a sponsorship award helped 50 enrolled PhD students to participate in the IUPAB congress (IUPAB fellowships). During this congress the Avanti-IUPAB prize was presented to Prof. A. Watts and the IUPAB-Young prize was presented to Dr. Yoav Shechtman.

The General Assembly elected Anthony Watts as the new president of IUPAB. Tony Watts is at the Biochemistry Department, Oxford University, Oxford UK, since 1980, being a full time Tutorial Fellow at St Hugh's College, Oxford, finally taking the role as Vice-Principal (2015-2017). Currently he is an Emeritus Professor at this University.

### **3. Activities carried on by the delegate within the Union during 2021 and impact on the Italian scientific community**

In April I strongly supported the candidature of Dr. Mario Malinconico for the Governing Board of the International Science Council (ISC). Dr. Malinconico from the CNR Institute IPCF had a strong background in science policies as Italian Representative at IUPAC (International Union of Pure and Applied Chemistry) and was engaged in green and sustainable polymer chemistry. Tragically, Dr. Malinconico died unexpectedly in August 2021 such that he was not able to fulfill his dream to contribute to international science policies within ISC.

Pier Raimondo Crippa, former professor of Physics at the University of Parma and honorary member of SIBPA, passed away at the beginning of January. Together with Arnaldo Vecchi, who also recently passed away, he was one of the founders, in 1973, of the Society of Pure and Applied Biophysics, of which he was President from 1992 to 1994.

From January 18 to 22, 2021, the XXV SIBPA-IVSLA International School of Pure and Applied Biophysics on "Quantitative analysis of optical imaging for Medicine and Biophysics" took place. The school was the result of the joint effort of the Italian Society of Pure and Applied Biophysics (SIBPA), the Venetian Institute for Sciences and Arts (IVSLA), the Institute Pasteur (IP, Paris) and the Institute of Applied Sciences and Intelligent Systems (ISASI) of the National Research Council (CNR). The school, which should have been held in Venice in the gorgeous venue of Palazzo Franchetti, was converted to an online event due to the travel restrictions related to the COVID19 pandemic and was supported by the Università di Milano-Bicocca (UniMIB, Milano, I). The school offered to 35 participants, coming from 14 countries (Belgium, Ecuador, Egypt, France, Greece, Iraq, Iran, Italy, Peru, Portugal, Russia, Spain, UK, USA), an overview of the foundations and applications of some of the most recent methods for quantitative analysis of data provided by modern optical and multimodal imaging, with a special focus on recent machine learning approaches. Details on the program of the school can be found at the link: <https://www.sibpa.it/index.php/scuola-internazionale-di-biofisica-sibpa-ivsla/school/133-xxvedition-2021>.

SIBPA offered five bursaries to participate at the 2021 virtual meeting of the Biophysical Society. Three of them were reserved for early career scientists and two for undergraduate and postgraduate students.

IUPAB promoted the "Biophysics Week", an activity initiated by the American Biophysical Society. It took place from March 22 to 26, with several events in Italy. In Genova, we organized a "Biophysics Week Guest Lecture", which was held by prof. Luis Pardo (Max Planck Institute, Göttingen) on the topic "The role of the voltage-gated potassium channel KV10.1 in cell division and tumor progression". More than 70 people from America, Asia, and Europe attended the Guest Lecture on highlighting the role that ion channels can play in cancer. On March 25, Drs. Rita Carrotta and Vincenzo Martorana (IBF - Palermo) held a seminar on "Biophysics in Times of the Pandemic", addressed to students of the high school "Istituto Magistrale F. Aprile".

From July 24 to 28, the meeting of the European Biophysics Societies Association (EBSA) was held in Vienna as a hybrid meeting. During the EBSA General Assembly, held on 27th July 2021 in Vienna, Mauro Dalla Serra has been delegated by SIBPA to present the Italian bid for the 2025 Congress. EBSA Executive Committee was unanimously in favor of selecting Italy for the 2025 EBSA Congress, and felt that Rome would be an excellent venue. Mauro Dalla Serra, IUPAB vice-delegate and CNR-IBF Director, will chair the Organizing Committee. The congress will be held in April 2025 at the Parco della Musica; more than 1500 European biophysicists are expected to participate.

After two mandates, Dr. Giuseppe Zucchelli from the CNR Biophysics Institute (IBF, Milan section), could not be elected again as member of the council of IUPAB. Fortunately, we could convince Dr. Gabriella Viero from IBF (Trento section) to present her candidature for IUPAB councilor at the General Assembly, where she was indeed elected! Dr. Viero took responsibility in the important Task Force “On the Use of Big Data in Biophysics”.

#### 4. Conclusions

With the election of Dr. Gabriella Viero from the CNR Biophysics Institute (IBF, Trento section) as councilor of IUPAB, the relationship between the Italian biophysics community and IUPAB have been intensified and we are looking forward into an active participation of Italy within IUPAB.

Signature

A handwritten signature in blue ink, appearing to read 'Mauro Dalla Serra', is written below the 'Signature' label.

Genova, April 27, 2022