

# International Union of Pure and Applied Biophysics

## Activities' Report - Year 2022

**Delegate: Michael Pusch**

### 1. Introduction

Finally, in 2022 the effect of the pandemic was eventually dramatically diminished, allowing for example in person scientific meetings. It can only be hoped for that several lessons from this experience will be learned to be better prepared for similar situations. Unfortunately, with Russian aggression in Ukraine and the ongoing climate change, two severe crises continue to overshadow the international situation with impact on science as well. On April 4, the Intergovernmental Panel on Climate Change (IPCC) of the United Nations released a report on mitigation of climate change, highlighting again that reaching a 1.5°C global temperature increase in the near-term would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans. These problems can only be solved by international collaboration and using a scientifically sounded approach. In that context, the International Science Council (ISC) could play an important role in providing scientifically grounded advice to policy makers. We are proud that the Italian IUPAB councilor Gabriella Viero (CNR) has been appointed as IUPAB delegate at ISC.

### 2. Main activities carried on by (Union name) during 2022 relevant for Italy and for CNR

#### *New Secretary-General*

The Executive Committee of IUPAB announced that Prof. Juan Carmelo Gómez-Fernandez has unfortunately had to step down as Secretary-General of IUPAB due to health conditions, sadly he passed away on 11 May 2022. In March 2022, Associate Professor Ron Clarke of the University of Sydney was co-opted for 3 years to serve on the Executive Committee of IUPAB as the new Secretary-General.

#### *Support of events postponed during the Covid pandemic*

IUPAB executive Committee has agreed to support some events postponed to 2022 from previous years as a result of the Covid pandemic including the IUPAB Focused Meeting ("The biophysics of neurotransmitter-gated ion channels" - Ottawa, May 25-27th), IUPAB also supported the Biophysical Society Meeting (February 18 – 23, San Diego).

#### *New policy for supporting IUPAB activities*

In March 2022 a new policy was proposed for supporting IUPAB activities. According to this policy, financial support is available for regional workshops or schools devoted primarily to foster education and research opportunities for early career biophysicists, especially in those areas of the world where biophysics is developing as a discipline and where demonstrated needs exist. Also supported are regional meetings aimed at bringing together biophysicists from a number of different countries in a particular area of the world, such as continents or other geographic groupings, i.e., Pan Asia, Pan India, Europe etc.).

#### *IUPAB support of researchers in Ukraine and Russia*

IUPAB expressed its deep concern regarding the large-scale Russian invasion of Ukraine, which has already led to devastating loss and disruption of many lives. IUPAB supports every possible measure that can be taken to avoid any escalation of the war, with its disastrous humanitarian effects, and to bring the war to a close. As a member of the International Science Council (ISC), IUPAB councillors and executive

committee endorses the recent ISC statement “The ISC expresses its deep dismay and concerns regarding the military offensives being carried out in Ukraine.”

#### *IUPAB-Biophysical Society Meeting, San Francisco 2022*

During the 66th Annual Meeting of the Biophysical Society (BPS; San Francisco 19-23 Feb. 2022), IUPAB and BPS held a meeting with the participation of the following representatives: IUPAB: Manuel Prieto (President), Christina Sizun (Treasurer); BPS: Frances Separovic (Past-President), Jennifer Pesanelli (Exec. Officer), Gail Robertson (President), Taekjip Ha (President-Elect), Erin Sheets (Secretary). The already on-running collaboration between the two organizations was analyzed, and this will be continued in the framework of reciprocal funding of several initiatives, such as main lectures at the IUPAB and BPS meetings, as well as student travel grants, and poster prizes.

#### *IUPAB Task Forces*

IUPAB has three “Task Forces”, which are Structural Biology, Big Data, and Education and Capacity Building. Dr. Gabriella Viero from CNR, who has been elected as IUPAB councilor at the General Assembly in 2021 has been appointed as member of the Task Force “On the Use of Big Data in Biophysics”. During the entire 2022, in her capacity as member of the Task Force and IUPAB she supported the submission of a seminar proposal in the context of the SciConData meeting 2022 (Korea), a CODATA initiative. For this purpose, in collaboration with Prof. Anthony Watts (UK) and Prof. Chary Kandala (India), she contacted and organized a Session proposal entitled “Deep Learning: What Big Data in Biophysics can teach us all?”. The session was organized to discuss about the implications of AI and Deep learning in biophysical data. In fact, the exponential growth in genomic data has not only underpinned the availability of extensive genomic information across all domains of life but led us to the nascent era of personal genomes and genomic medicine. In parallel, the growth of cryo-EM at an explosive rate took over the field of structural biology and allowed us to visualize high-resolution 3D models of macromolecular complexes that were not accessible to X-ray crystallography and other approaches. The common exponential growth in genomics and structural biology and the successful usage of associated Big-data by the scientific community, companies, and various national institutes/organizations require analytics involving exploitation of Artificial Intelligence (AI), Machine Learning and Deep Learning approaches. The proposed session wanted to discuss ideas to standardize the biophysical data and improve the accuracy and transparency of all currently available raw-data sharing platforms, supporting structural biology data. Unfortunately, despite its approval by CODATA, the session did not take place in the context of the SciConData Meeting, due to the too expensive request for participation. IUPAB decided to independently co-sponsor this initiative by December 2022, but the unfortunate loss of Prof. Chary in Fall 2022, led to a temporary halting of the initiative.

#### *New IUPAB representative on the International Science Council (ISC)*

ISC is a non-governmental organization based in Paris with a unique global membership of 40 international scientific Unions and Associations (including IUPAB) and over 140 national and regional scientific organizations. It is the only international non-governmental organization combining the natural and social sciences and the largest global science organization of its type. ISC has an international and diverse Governing Board of 18 members and a declared mission to:

- Act as the global voice for science;
- Speak for the value of all science- and evidence-informed decision-making;
- Stimulate and support international scientific research and scholarship on major issues of global concern;
- Articulate scientific knowledge on such issues in the public domain;
- Promote the continued and equal advancement of scientific rigour, creativity and relevance in all parts of the world; and,

- Defend the free and responsible practice of science.

In the northern hemisphere summer of 2021, Dr. Gabriella Viero (CNR), Italy's recently elected IUPAB councillor, was asked by the Executive Committee if she would kindly be IUPAB's new representative on the ISC. Gabriella graciously accepted. In her capacity of IUPAB delegate at ISC, Dr. Viero attended several monthly online meeting, closely following the undergoing reorganization of ISC after the election of the new President Prof. Gluckman. She maintained the connection between ISC initiatives, such as:

1. Supporting the submission of IUPAB's candidate Prof. Peluffo as member for the Liaison Committee of the ISC Regional Focal Point for the Latin American and Caribbean Region;
2. Disseminating the United Nations General Assembly approval by consensus a resolution that promulgates 2022 as the International Year of Basic Sciences for Sustainable Development;
3. Supporting the release of statements about the IUPAB support of Ukraine scientists;
4. Supporting the release of statements about the IUPAB support of women in science in Afghanistan;
5. Preparing for the ISC General Assembly that will take place in Paris (May 2023).

Finally, Dr. Viero took connection with Augusta Maria Paci, Deputy Delegate at ISC for CNR, in order to coordinate efforts and activities between IUPAB and other Unions, as well as across CNR members of ISC.

#### *New cooperation between IUPAB and IUPAP*

The Commission on Biological Physics was established by the International Union of Pure and Applied Physics (IUPAP) in 1990 to promote exchange of information and views among members of the international scientific community in the field of Biological Physics. The IUPAP Commission on Biological Physics decided to incorporate a representative of IUPAB as an associate member. Prof. Peter Pohl, Councillor of IUPAB and Full Professor of Biophysics, Johannes Kepler University (JKU) Linz, Austria, has been elected as IUPAB's representative.

#### *Social Media*

IUPAB is now on social media platforms! These include Twitter (@IUPAB1), Instagram (IUPAB1) and Facebook (IUPAB2). Please head over to any of these pages to keep up to date on all IUPAB activities. Additionally, a brand new website is under construction and will be launched within the next 2 months! A IUPAB WiKi page has also been created.

#### *Future IUPAB Congresses*

The 2024 (June 24-28th) IUPAB congress will be held in Kyoto, Japan, Chair: Hiroyuki Noji, Tokyo.

### **3. Activities carried on by (Italian Delegate name) within the Union during 2022 and impact on the Italian scientific community**

In July 2022, Italian councillor Gabriella Viero has been invited to attend an extraordinary IUPAB Executive Committee Meeting, Lisbon, Portugal. During the meeting a number of issues about the reorganization of IUPAB have been discussed, alongside updates about specific activities of the IUPAB Task Forces.

As member of the editorial board of Biophysical Reviews (BR), the review journal of IUPAB, Dr. Viero attended three online meeting organized by the editor in chief to discuss BR positioning and has been invited to submit a cameo that has been published in late 2021 (G. Viero - Incoming new IUPAB Councilor Biophys Rev. 2021 Dec; 13(6): 845–847 doi: [10.1007/s12551-021-00861-2](https://doi.org/10.1007/s12551-021-00861-2)).

SIBPA, the Italian Society for Pure and Applied Biophysics, offered two bursaries of 1500 Euros each to participate at the 2023 meeting of the Biophysical Society in San Diego to Lisa Cuneo e Eleonora Perego.

As in previous years, the Biophysics Week took place from March 21 to 25. Biophysics week with several activities organized by the Italian Biophysics community.

At the University of Milan, a student chapter was created. The ambitious group seeks to create an inclusive community of students to raise awareness of the field of biophysics at an early stage of a student's career.

Prof. Clara Frontali, Istituto Superiore di Sanità held a seminar entitled: Relationship between Physics and Biology: the personality of Mario Ageno.

Dr. Ranieri Bizzarri, CNR, held a seminar entitled: Biophysical characteristics of living systems (and how to look at them).

Drs. Silvia Vilasi and Vincenzo Martorana held a seminar entitled: The Soberana vaccines, the Cuban approach at fighting COVID-19.

Drs. Rita Carrota, Vincenzo Martorana, Silvia Vilasi and Maria Rosalia Mangione held a lecture entitled: Meetings with Biophysics: molecules in movement and their interactions, from a macroscopic to a microscopic view.

A Youtube channel has been created for members of SIBPA where some of the lectures can be followed ([www.sibpa.it/youtube](http://www.sibpa.it/youtube)).

The SIBPA President Alberto Diaspro has received the Gregorio Weber Award 2022 from the Biophysical Society during the San Francisco meeting.

#### **4. Evaluation of the participation in terms of benefits and membership cost**

The membership costs for CNR at IUPAB are rather modest, while the benefit of being involved in the international biophysics community is critical. This is important in an ever more globalized world and exemplified by the long list of international activities of IUPAB, which are of general importance for science policies.

#### **5. Conclusions**

The relationship between the Italian biophysics community and IUPAB continue to be vivid and we are looking forward into the future achievement of the International Science Council (ISC), with councilor Dr. Gabriella Viero as IUPAB delegate at ISC.

Signature



Genova, May 15, 2023