

International Union of Pure and Applied Biophysics

Activities' Report - Year 2023

Delegate: Michael Pusch

1. Introduction

The field of biophysics stands at the intersection of biology and physics, exploring the fundamental principles governing biological systems using the tools and methodologies of physics. For the Italian Biophysics community, the International Union of Pure and Applied Biophysics (IUPAB), with its mission to promote and facilitate biophysics worldwide, continues to play an important role to stay connected to the international community.

In 2023, the contribution of IUPAB to the International Science Council was full of meaningful engagements. Through countless online meetings, CNR brought forth the rich insights and perspectives of IUPAB to global dialogues on scientific progress and policy frameworks. Through the IUPAB councilor Gabriella Viero (IBF-CNR), a highlight amidst these digital exchanges was keeping active communication between IUPAB Activities and National Society such as SIBPA. In addition, IUPAB maintained contact with other CNR representative of Internationalization Activities, in particular Dr. Augusta Paci.

In addition IUPAB contributes with active participation to the changes to the Statutes of the International Science Council, which helped CNR, through IUPAB to keep a foot into the most relevant body in International Science and Diplomacy activities. Particularly enriching experience was the participation in the Mid-Year Annual Meeting of ISC in Paris, where as IUPAB, the CNR had the opportunity to connect not only with fellow delegates from Italy but also forge new bonds with representatives from the Global South, further amplifying the reach and impact of IUPAB's initiatives.

2. Main activities carried on by IUPAB during 2023 relevant for Italy and for CNR

In addition to the long procedures and numerous meeting required for the approval of the Statutes, that happened in Spring 2024, IUPAB put a lot of efforts in organizing multiple events for enrolling young physicists and biophysicists into a more international milieu. The efforts for the organization of IUPAB congress that is going to take place in Kyoto Japan, were also unfolding at multiple levels, from speaker proposal to evaluation of young biophysicists candidatures for the IUPAB Young Investigator Prize (winner was Hideaki Kato). Last but not least IUPAB join the organization of numerous activities connected to the International Year of Basic Sciences for Sustainable Development. A few activities are listed below, all activities can be found in detail at this webpage: <https://iupab.org/iupab-news-88/>.

Professor Madan Rao, IUPAB Lecturer at the Biophysical Society Meeting 2023

The IUPAB-sponsored invited speaker at the 67th Annual Meeting of the Biophysical Society (San Diego Convention Center, Sat. 18th Feb. - Wed. 22nd Feb., 2023) has been Professor Madan Rao of the Simons Centre for the Study of Living Machines, National Centre for Biological Sciences in Bangalore, India. Professor Rao spoke at the symposium "50 Years After the Fluid Mosaic Membrane".

International Conference in Biological Physics 2023

The International Conference on Biological Physics (ICBP) is a conference organized by the International Union of Pure and Applied Physics (IUPAP) held every three years to promote academic interaction among members of international biological physics. The 11th ICBP is being organized by the Korean Physical Society and the Korea Institute for Advanced Study and has been held from the 14th - 18th of August in Seoul, Korea. IUPAP and IUPAB have a strong working relationship and collaboration. In 1990 IUPAP established The Commission on Biological Physics 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 incorporates a representative of IUPAB as an associate member. This position is currently held by Prof. Peter Pohl, Councilor of IUPAB and Full Professor of Biophysics, Johannes Kepler University (JKU), Linz, Austria.

IUPAB is on social media platforms

These include Twitter (@IUPAB1), Instagram (IUPAB1) and Facebook (IUPAB2). Additionally, a brand new website is now live at "<https://iupab.org/>". A IUPAB WiKi page has also been created (https://en.wikipedia.org/wiki/International_Union_for_Pure_and_Applied_Biophysics).

International Year of Basic Sciences for Sustainable Development 2023 - Webinathon

The International Year of Basic Sciences for Sustainable Development (IYBSSD) started in 2022 under the aegis of UNESCO (<https://www.iybssd2022.org/en/>). IUPAB joined the initiative as a Founding Union and delegating Prof. Anthony Watts, IUPAB President elect, to the Steering Committee. The success of IYBSSD2022 extended into 2023, with many local and international events. On 5 June 2023, World Environment Day, IYSSB organized a 24-hour Webinathon. The aim was to show how scientists in different disciplines and different geographical locations tackle sustainable development in teaching and research. The 24 hours were divided into six 4-hour slots. IUPAB coordinated a session on "Biophysics for Global Health and Sustainability". IYBSSD will continue as the International Decade of Sciences for Sustainable Development 2024-2033, proclaimed by the UN General Assembly in August 2023.

The Michèle Auger Award for Young Scientists' Independent Research

In late 2018, long time Editorial Board Member of the Biophysical Reviews journal, Professor Michèle Auger, sadly succumbed to illness. As a mark of respect for Michèle, the Biophysical Reviews' Board, together with the support of Springer-Nature Corporation, created a perpetual memorial award in honor of her life and service. 'The Michèle Auger Award for Young Scientists' Independent Research' is to be granted each year to a single candidate performing biophysical research who, at the time of application, is under 40 years of age. The award consists of a plaque, a free personal subscription to the journal and an invitation to submit a single author review article to Biophysical Reviews. The winner's published Review carries a short foreword about the life of Professor Michèle Auger, along with her work associated with teaching and training the next generation of biophysical scientists. Judging will be carried out by a special committee assembled from approximately twenty senior biophysical scientists (at the senior Professor, Head of Institute, Head of Department level) with this assembly taking place after the submission deadline (October 31).

The World Academy of Sciences - Support for Science in Developing Countries

The World Academy for the advancement of science in developing countries (TWAS) was founded in 1983 by an international group of eminent scientists, led by Pakistani 1979 Nobel Prize Winner for Physics, Abdus Salam. Their aim was to improve the state of scientific research in developing countries by supporting excellent research, facilitating contacts, providing research facilities, encouraging cooperations with developed countries and promoting research into major problems of developing countries. From its foundation TWAS has been generously supported by the Italian Government, and its headquarters are located in Trieste, Italy. Since 1991 TWAS has been administered by UNESCO. TWAS runs a variety of schemes for the support of scientists, including biophysicists, in developing countries.

Avanti-IUPAB Prize

Avanti Polar Lipids and IUPAB have established one triennial award to be presented at the IUPAB Congresses. IUPAB encourage the nomination of candidates for the Avanti Polar Lipids/IUPAB Medal and Prize to be awarded at the 2024 IUPAB Biophysics Congress, in Kyoto, Japan. The award will be given to an investigator for outstanding contributions to any theme within the field of biophysics without limit of age. The winner receives a honorarium of USD\$ 3,000, and a medal. The IUPAB Council will

constitute a Jury that will make the award. IUPAB Adhering Bodies, Scientific Societies, Universities, Research Institutions or senior biophysicists are all eligible to act as nominators.

IUPAB Young Investigator Prize

IUPAB invites all biophysicists to nominate candidates for the IUPAB Young Investigator' Medal and Prize to be awarded at the 2024 IUPAB Biophysics Congress, in Kyoto, Japan. The award will be given to a young investigator for outstanding contributions to the field of biophysics. The winner receives an honorarium of US\$ 2,000 and a medal. The IUPAB Council will constitute a Jury that will make the award.

3. Activities carried on by Italian Delegate Michael Pusch within the Union during 2023 and impact on the Italian scientific community

Activities of Italian IUPAB council Gabriella Viero (IBF-CNR)

In 2023, Dr. Viero's role as a delegate of IUPAB to the International Science Council was filled with dynamic engagements. Participating in numerous online meetings, she actively contributed insights and perspectives from IUPAB to global discussions on scientific advancements and policy frameworks. One significant highlight was attending a general assembly meeting in Paris in May 2023, bridging virtual connections with tangible interactions, enriching collaboration and understanding. She attended multiple meetings on various crucial issues, from open science to AI, scientific inclusion, and world-wide challenges according to Agenda 2030. Very recently (May 2023) she had the unique opportunity to participate to the Middle Annual Meeting of ISC in Paris with scientific delegates from National Academies, International Unions and affiliate bodies from all over the world. During this event, she had the chance to connect not only with other delegates from Italy, but also to build brand new connections with delegates from the Global South.

Simultaneously, she dedicated efforts towards the organization of the highly anticipated IUPAB Congress in Kyoto 2024. Her responsibilities included proposing distinguished speakers, and she was delighted that two of her nominations were selected to deliver talks in June 2024. Furthermore, she is honored to have been proposed as a speaker herself by the IUPAB President Elect at this prestigious event, representing IUPAB's dedication to sharing knowledge and fostering dialogue in the biophysics community.

Moreover, she actively participated in a pivotal meeting in Lisbon with the Executive Committee of IUPAB. Discussions centered on strategic initiatives, with a primary focus on enhancing the involvement of young students in biophysics. It was a collaborative effort aimed at nurturing the next generation of scientists and ensuring the continuity of innovation in our field.

Biophysics School

The Italian Society for Pure and Applied Biophysics (SIBPA), the Istituto Veneto di Scienze Lettere e Arti (IVSLA), along with the Italian Society for Extracellular Vesicles (EVIIta) and the H2020-FET-Proactive project BOW, promoted the XXVII School of Pure and Applied Biophysics on contemporary and emerging scientific topics related to Extracellular Vesicles (EVs). The selected subjects drew many draw young researchers' attention to frontier research issues of considerable scientific and educational impact. The School was held in the magnificent Palazzo Franchetti, in the historical centre of Venice.

Biophysics@Rome 2023

On 19 and 20 April, the yearly meeting "Biophysics@Rome" entitled "On the path to sustainability" was held. In occasion of the 50th birthday of SIBPA and the centenary of the Italian writer Italo Calvino, the SIBPA president Alberto Diaspro held a dialogue with Laura Di Nicola from the Laboratorio Calvino of the Sapienza University.

EBSA congress

Stockholm was the venue for the 14th EBSA congress (July 31st – August 4th 2023). The congress was hosted by SFBBM (the Swedish Society for Biochemistry, Biophysics and Molecular Biology), the Swedish National Committee for Molecular Biosciences of the Royal Swedish Academy of Sciences, and The Protein Society. There were a record number (1054) of attendees for an EBSA-alone congress, from 45 nations. EBSA student bursaries were awarded to 56 early career scientists from Europe, and 6 IUPAB travel bursaries to those from outside Europe. The congress was preceded by 5 specialist satellite

meetings, including a 3-day EBSA Summer School, limited to 60 students and expertly coordinated by local scientists, Lena Mäler and Erik Lindahl. Plenary speakers, David Julius (UCSF, USA), Karen Fleming (Johns Hopkins, USA), Hao Wu (Harvard, USA) and Thorsten Wohland (NUS, Singapore), gave introductory lectures. ~50% of the students were attending their first large conference. The Italian vice IUPAB delegate Mauro Dalla Serra is member of the executive committee of EBSA and was selected as the organizer of the 2025 EBSA congress in Rome.

Photons and proteins - A workshop in honor of Martin Chalfie

The "Photons & proteins - A workshop in honor of Martin Chalfie" was held at the Università di Parma, Centro Sant'Elisabetta on July 3, 2023. The discovery and development of the Green Fluorescent Protein has revolutionized the research in life sciences, by making accessible real-time molecular processes in living cells that would be otherwise invisible. In the occasion of the conferral of the honoris causa degree in Physics by the University of Parma to Nobel laureate Martin Chalfie, the workshop honored his work and proposed an array of lectures touching on diverse aspects of the interaction of light with proteins. This workshop was part of the events for celebrating the 50th anniversary since the foundation of the Italian Society for Pure and Applied Biophysics (SIBPA).

Session within the CMD30 (Condensed Matter Division) of the EPS

SIBPA organized a session within the CMD30 (Condensed Matter Division) of the EPS as a Joint Conference at FisMat2023 which was held on 4-8 September 2023 in Milan (<https://eventi.cnism.it/cmd30-fismat>). On the occasion of the 50th year since the foundation of the society, SIBPA held a mini-colloquium entitled "50 years of SIBPA: a journey through the molecules of life", during which the fiftieth anniversary was celebrated with a selection of talks which illustrated some of the numerous themes relating to the molecules of life.

International school of biophysics "Antonio Borsellino"

Organized by SIBPA, the "Memos for Biophysics into the Future: lightness, quickness, exactitude, visibility, multiplicity" school was held from 16 to 23 October 2023 at the Majorana Center in Erice as part of the International school of biophysics "Antonio Borsellino". The directors of this school were Mauro Dalla Serra, Alberto Diaspro and Cristiano Viappiani.

Biophysics reveals the footprints of life, Science Festival, Genoa

As part of the celebrations of 50 years of SIBPA, on November 5th, at the Luzzati Gardens, there was held a round table with Ranieri Bizzarri, Alberto Diaspro and Velia Minicozzi, moderated by Paolo Bianchini.

50 years of SIBPA – in memory of Antonio Borsellino

On 15 December, a celebration of the 50th anniversary of SIBPA and a commemoration of Antonio Borsellino took place in Genoa at the Palazzo della Borsa. Present at the event were Carlo Maria Becchi, Ranieri Bizzarri, Martino Bolognesi, Martin Chalfie, Mauro Dalla Serra, Alberto Diaspro, Franco Gambale, Alessandra Gliozzi, Francesco Lenci, Velia Minicozzi, Carlo Musio, Michael Pusch, Alessandro Verri, Cristiano Viappiani and many others who have contributed to the growth of the company.

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

The engagement of CNR (National Research Council of Italy) in the activities described above is pivotal to remain at the forefront of the rapidly evolving landscape of scientific advancements. By participating in global dialogues facilitated by organizations like the International Science Council (ISC) and the International Union for Pure and Applied Biophysics (IUPAB), CNR ensures that it is not only keeping pace with but also actively contributing to the cutting-edge developments shaping the future of science.

Through CNR's involvement in ISC meetings, it gains access to crucial insights and perspectives on a wide array of pressing scientific issues, from open science to AI and beyond. This participation not only enriches CNR's understanding of global trends and challenges but also positions it as a key player in shaping international agendas and policies.

Furthermore, CNR's active contribution to the planning and organization of prestigious events such as the IUPAB Congress in Kyoto 2024 underscores its commitment to fostering collaboration and knowledge exchange within the scientific community. By proposing distinguished speakers and being nominated as a

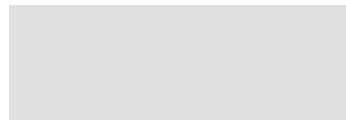
speaker itself, CNR showcases its expertise and leadership in biophysics, reinforcing its reputation as a hub of scientific excellence.

Moreover, CNR's involvement in strategic initiatives aimed at nurturing the involvement of young students in biophysics is crucial for cultivating the next generation of scientists. By investing in the education and mentorship of young researchers, CNR ensures the continuity of innovation and excellence in scientific research.

5. Conclusions

In essence, CNR's active engagement in IUPAB and ISC activities is not only key for staying abreast of the fast-moving changes in science but also for playing a leading role in shaping its future trajectory. By leveraging its expertise and resources to contribute to global dialogues and initiatives, CNR solidifies its position as a driving force in scientific innovation and progress.

Signature



Genova, May 4, 2024