IUPAB
Connecting the World of Biophysics

# IUPAB News #72

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## *Message from the Secretary General*

*Juan Carmelo Gómez-Fernández*

Dear representatives of Adhering Bodies, Societies and members of the biophysical community, please, take notice of the following news and remember the following events.

**Next General Assembly to be held in Foz do Iguazú (2020).**

This General Assembly should elect a new President-elect, and12 Councilors.

It will be also proposed some changes in the Statutes, as mentioned below.

**New policies of IUPAB approved by the Council**

The IUPAB Council has recently approved some proposals of the Executive Committee in relation to improve some aspects of our structure and policies.

a) Changes in the Statutes. We will submit the following changes to the next General Assembly to be held in our 2020 Congress.

-Treasurer from France. The current Treasurer is suffering problems to keep operative the bank account in France. It seems convenient that the Treasurer should be normally a resident in France. The Statutes should be modified to establish this condition.

-Councilors elected for specific jobs. In order to encourage the involvement of Councilors in IUPAB activities, we should try to elect Councilors for a given job. Jobs could be: a) Publications Committee; b) Congresses, Focused Meetings and other events c) Task Forces and Education; d) Fellowships.

b) Journals:

-We want to introduce the new editor of Biophysical Reviews (BREV). The former editor of BREV (Prof. Dos Remedios) resigned from this position and the Deputy Editor (Damien Hall) took this post.

c) Revision of IUPAB funding policies. Find the whole new policies in our website.

There must be different types of events to be sponsored. Note that for those events in which IUPAB will be the main sponsor the event will have to adopt a pattern to be designed by IUPAB and IUPAB must be included in the title (types a, b and c).

The aim of IUPAB is to promote Biophysics on the international stage not to make a profit. If a profit is realized in one of the events funded by IUPAB, the profit will stay with the local biophysical society or adhering body and must be used to promote biophysics within the host country.

a. IUPAB Congress: IUPAB will provide up to 60 000 € for the triennial IUPAB Congress. Funding will include a direct grant to the organizers, as well as support for student travel to the congress (normally 30 000 € for each). IUPAB will propose co-chairs for scientific sessions.
b. Focused Meetings: IUPAB will provide 15,000 € for focused meetings to be held in years where there is not an IUPAB congress. Funding will include a direct grant of 10,000 € to the organizers of the meeting, as well as 5,000 € support for student attendance at the Focused Meetings.

c. Workshops in which IUPAB is the main sponsor: IUPAB will provide up to 10 000 € to support workshops normally only in years where there is no IUPAB congress. The IUPAB will allocate the proportion of funds to be devoted towards organization of the workshop versus student travel. These workshops will be identified as an "IUPAB workshop on …(specify title)" These workshops cannot be affiliated with a Congress or event organized by another agency or society.

d. Sponsorship of events in which IUPAB is not the main sponsor: IUPAB will provide up to 5,000 € for student travel to scientific meetings/workshops. These funds are only for Biophysics focused meetings that are international in scope and that are not regularly occurring meetings – i.e. they cannot be used for annual, biannual or triennial meetings, etc. organized by Adhering Bodies.

e. IUPAB Plenary Lectures: IUPAB may provide funds (about 1000 €) for an IUPAB plenary lecture to be delivered in a Congress or Meeting organized by one of our Adhering Bodies (not Observers) in a country affiliated to IUPAB. Preference will be given to Regional Associations and to major Meetings. IUPAB may establish agreements with organizers of this type of meetings to fund these lectures on a regular basis. Other exceptional cases can be considered when extremely well justified. IUPAB will be responsible for choosing and inviting the lecturer and the person who will chair the session. In all cases the applicant Adhering Body must be in good standings. Care will be taken in keeping a fair geographical distribution.

Normally 75% of the funds should be transferred in advance. The rest when the organizers fulfill all the requirements.

Travel support is for students from developing countries or developing communities/regions of the host country. Written justification to IUPAB is required if it is not possible to meet the target for student travel.

3. Prizes. Two prizes will be awarded coinciding with our triennial Congresses, the first ones in Foz do Iguazú (2020). These prizes will be sponsored by Avanti Pure Lipids (the work will be not limited to research on lipids). One of the prizes will be for a biophysicist below 40 years of age. The other one without limit of age.

4. Sponsorship. IUPAB may have the possibility of looking for sponsors for the web site, IUPAB Newsletters and IUPAB News (bulletin) and also for prizes (as detailed above) and for Congresses. This might be an important source of income that could help us to fund more activities.

**20th IUPAB Congress**

It will take place in October 26th-30th, 2020, in Foz do Iguazú, Brasil.

Related to this Congress will be an IUPAB-SBBq-SBBf Young Scientists Program (YSP), São Paulo, Brazil, October 22th to 24th, 2020

Fellowships for students and early career biophysicists will be available for both events.

**Events sponsored by IUPAB to take place soon:**

-IV Meeting of Young Biophysicists November 26th 2019 San Luis, Argentina

Best wishes to all of you and receive our biophysical greetings

Juan Carmelo Gómez-Fernández

IUPAB Secretary General

# Biophysics and the war on cancer

*by Francisco Blanco*

*CIC bioGUNE, Derio, Spain*

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It was in 1971 when President NIXON signed The National Cancer Act to increase USA efforts against tumor diseases by boosting the resources dedicated to cancer research. For some people the results in terms of reducing the mortality rate have been disappointing, while others value the increase in our understanding of cancer biology, risk factors, treatments, and prognosis of certain types of tumors.

Nowadays about 50 % of cancer occurrences are curable by a combination of surgery, radiation and chemotherapy, but others remain largely incurable, like pancreatic cancer. One of the major obstacles is the heterogeneity of this malignancy, both at the global (there are more than one hundred types of cancer) and at the local level (like the genetic variability in the cells of a single tumor).

Where does biophysics lie in the war on cancer? As an inter-, cross-, multi-, pluri -, trans-disciplinary research activity (choose your favorite), biophysics supports many of the efforts to understand and cure cancer. Molecular imaging, for instance, is an application to biosystems of different phenomena belonging to the realm of physics (fluorescence, radioactivity, NMR), which help in the detection and monitoring the progression of tumors, as well as in fundamental cancer research. The recently deceased molecular biologist Sydney Brenner once said that the fundamental object of biological research is the cell. Cancer arises from the aberrant behavior of cells, proliferating without control and disrupting tissue organization. Malignant cells create their own signals for sustained growth and duplication and transmit them through proteins by signal transduction cascades in a two-way communication between the extracellular matrix and the cell interior. Today it is possible to do single cell genomics and transcriptomics, and perhaps single cell proteomics will also be possible in the future. But it is already feasible to measure biophysical properties of single cells, like stiffness, as observed by atom force microscopy. Cancer cells are less stiff (more deformable) than normal cells due to reorganization of the cytoskeleton, which consists mostly of actin filaments and tubulin microtubules. A high level of deformability aids cancer metastasis, allowing tumor cells to detach from a primary tumor and squeeze through stroma, penetrate blood vessel endothelium, survive the circulatory system, and eventually, successfully reach a secondary organ for colonization. Cancer cell migration away from the primary tumor is driven by physical interactions between cells and the surrounding extracellular matrix, and the strength of these interactions play a role in regulating cancer cell migration.

***Biophysics supports many of the efforts to understand and cure cancer***

At the molecular level, the structure of protein complexes is indispensable for a comprehensive understanding of the mechanisms that govern cellular processes, many of them deregulated in cancer. Three main techniques exist today to study these structures at high resolution: crystallography, cryo-electron microscopy, and NMR. The three of them provide the average structure over large numbers of molecules, and can be applied to biomacromolecules inside living cells. Protein crystals inside single cells have been analyzed by serial femtosecond crystallography enabled by X-ray free-electron lasers, complexes can be observed by cryo-electron tomography inside cells, and the emerging in cell NMR is able to monitor the structure, ligand binding, and the phosphorylation of proteins. An electron microscopy methodology already exists for imaging whole cells in liquid, in order to study protein function inside cells in a state as close as possible to the native one.

***Francisco Blanco***

A remarkable feature of the eukaryotic proteome is the abundancy of intrinsically disordered proteins and of long disordered regions in folded proteins, as compared with prokaryote proteomes. Furthermore, the overall degree of disorder is two-fold larger in human cancer-associated proteins than in other protein categories, indicating that disorder plays key roles in cell signaling, where coupled folding and binding is a common mechanism. Strong binding may however involve little ordering, resulting in high affinity fuzzy complexes, as observed by NMR. Disordered proteins typically have low complexity sequences and may undergo liquid phase separation at high concentrations. Macroscopically this can be observed as the spontaneous formation of droplets from a miscible solution resulting in the coexistence of dense and light liquid phases. Some membraneless organelles (like Balviani bodies in dormant oocytes) are largely composed of intrinsically disordered proteins that phase separate from the aqueous interior of the cell and sequester other cellular components.

***The overall degree of disorder is two-fold larger in human cancer-associated proteins than in other protein categories***

Biophysical studies on the complex systems sketched above, increasingly focused on whole cells or cell representative media, will contribute to our understanding of cellular processes and to the fight against cancer. The

ultimate success in this fight concerns medicine, working together with many other disciplines. Among them, biophysics has the important role to help achieving the necessary knowledge about the appearance and development of malignant tissues at cellular and molecular levels, that can allow to uncover weaknesses of these tissues to guide strategies for their destruction.

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***Bio21 Institute Director's Message:***

## Congratulations to Emeritus Professor Frances Separovic

*Michael Parker*

It is with great pleasure that I congratulate Professor Emeritus Frances Separovic, Deputy Director of the Bio21 Institute on receiving the honour of being appointed an **officer of the Order of Australia** (General Division) announced in the **Queen's Birthday 2019 Honours List** on 10 June 2019.

**Frances has been awarded an AO for her distinguished service to science education, particularly to biophysical chemistry, as an academic, and to young women scientists**.

Frances was appointed as the first female Professor of Chemistry (2005) at the University of Melbourne and Head of the School of Chemistry from 2010 – 2016.

Frances has shown leadership in the field of biological magnetic resonance, which has previously been recognised by the ASB Robertson Medal for Biophysics in 2009, the Australia & New Zealand Society for Magnetic Resonance Medal in 2011, and the International Union of Pure & Applied Chemistry Distinguished Woman of Chemistry/Chemical Engineering in 2017. In 2012 Frances was the first woman chemist to be elected a Fellow of the Australian Academy of Science. She was also elected a Fellow of the Biophysical Society, and an International Society for Magnetic Resonance Fellow. Frances Separovic was one of twenty outstanding Victorian women who were inducted into the 2018 Victorian Honour Roll of Women, recognising her as a trailblazer for women in science.

In recent years, Frances has become very active as an advocate for women in science, through speaking to many groups of young women to encourage them in their scientific careers by telling her own story and highlighting how she has overcome the challenges she's faced.

Just to name a few, during 2018 Frances spoke to the Women in Science Network at the Faculty of Science (WiSN), Balmain Public School, Girls in Physics Breakfast - Bendigo, Royal Australian Chemical Institute Annual Dinner, Australian & New Zealand Association for the Advancement of Science, Institute for Molecular Bioscience - Brisbane, Faculty of Veterinary & Agricultural Sciences - Melbourne and Adelaide Protein Group on 'my brilliant career'.

You can also follow Frances on social media channels Twitter, LinkedIn and Facebook, that she uses as a platform to share news about the opportunities and challenges for women in STEMM.

We are very proud to have Professor Emeritus Frances Separovic AO as our Deputy Director, at the Bio21 Institute, where she continues to support initiatives for women in science.

Prof. Frances Separovic has been named an Officer in the General Division of the Order of Australia (AO) on the Queen's Birthday 2019 Honours list. Her citation reads: "For distinguished service to science education, particularly to biophysical chemistry, as an academic, and to young women scientists."

An explanation of the honour is as follows: In the Australian honours system appointments to the Order of Australia confer the highest recognition for outstanding achievement and service. The Officer of the Order of Australia is awarded for distinguished service of a high degree to Australia or humanity at large. This is wonderful recognition of Frances' contributions and we would be grateful if you could please share the announcement in the upcoming newsletter.

**Adelle Wright**, Australian Academy of Science

# New Chief Editor for Biophysical Reviews

*by Damien Hall*

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**After accepting an invitation in late January of 2019 by the IUPAB Executive, I became the third Chief Editor of Biophysical Reviews. In this companion piece to a Commentary describing the journal, I have been asked by the IUPAB Secretary General Prof. Juan Carmelo Gomez-Fernandez to provide a short self-introduction, both scientifically and personally, to readers of the IUPAB Newsletter. With a belief that you can only really judge a scientist by reading their papers, I have included some references from different stages of my career framed within a general narrative of my working life.**

*Early Life*: I grew up in Queensland Australia, as the youngest child in a family of newly arrived immigrants from England. My Father was a policeman and mother a homemaker. We moved around a lot due to my Father's frequent work transfers, which allowed me to see a lot of the very large state of Queensland as a child (crocodiles, kangaroos, beaches and the beautiful Queensland outback/bush). As a memorable counterpoint I also lived for about a year in London UK, when I was twelve years old. Like a lot of children in Australia, I performed some of my early schooling via correspondence course which in those days involved sending and receiving course work via post and occasionally talking to your teacher by telephone or radio.

*Education*: I performed my high school studies in the capital city of Brisbane, where my Father was posted for the latter half of his career. After graduating from high school I was granted admission to study science at the University of Queensland – one of the so called 'group of eight' major Australian universities. Performing my undergraduate studies with final-year majors in chemistry and biochemistry I received a first class Honours degree in 1995. From 1996 to 1999 I earned a PhD in Biochemistry, carrying out my studies within the Laboratory for Physical Biochemistry headed by Prof. Donald J. Winzor. Don was literally one of Australia's first home grown physical chemists [Winzor, 2016]. By taking only one student at a time he had an uncommon approach to supervision that comported more to the K-type strategy in r/K evolutionary theory [Parry, 1981]. My doctoral studies were concerned with investigations into the theory and measurement of protein adsorption to surfaces [Hall, 1999]. Don retired soon after I graduated, making me his last student. I enjoyed my Ph.D. research with Don and later came to appreciate the value of his style of training from a Malthusian perspective. During my candidature I attended a talk by Arthur Kornberg in which he encouraged all scientists to change topics every five years during the early stages of their research life. Taking this advice to heart after graduating I left to start my first postdoctoral position on a new research subject!

*Working Life*: My first job was as a John E. Fogarty Fellow working in the Section on Physical Biochemistry at the National Institutes of Health USA. I had come to the NIH to work with Dr. Allen Minton, who although known for his work in developing the macromolecular crowding concept [Minton, 2013] was (and still is) a physical chemist who had made significant developments in many different areas including interfacial chemistry, quantum theory, colloidal analysis and characterization of biomolecular interactions. From 2000 – 2003 I worked on the topic of cytoskeletal assembly in complex fluids, such as those found in the cell cytosol. This time was academically very stimulating and Allen and I wrote a number of papers together [e.g. Hall and Minton, 2002; Hall and Minton, 2003; Hall and Minton 2004]. Largely due to Allen's encouragement I was able to publish a number of single author papers on various topics related to my main research [Hall, 2001; Hall, 2002: Hall, 2003]. Two that I found to be of particular interest concerned novel aspects of macromolecular crowding [Hall, 2002] and tubulin assembly kinetics [Hall, 2003]. As is my research preference (and was drilled into me during my PhD training) both works involved a combination of experimental and theory/simulation.

I had long been interested in concepts associated with reduction in dimensionality of diffusion search space as applied to biology. With Kornberg's advice still in my mind I wrote a fellowship application to examine some of these concepts and left the US in 2003 to begin another new topic, this

time at the Department of Chemistry within the University of Cambridge UK. My Human Frontiers Science Program Fellowship was carried out in the newly established Biophysical Laboratory headed by Prof. Christopher M. Dobson (My sincere condolences to Chris's family and close friends upon his recent passing ). My time in Chris's laboratory was interesting as it was my first time being in a mega-lab (spread across three departments with altogether about 50 postdoctoral scientists and PhD students). Upon starting out Chris asked me to help out two scientists who had been there for a few years without yet publishing their work. This request had quite an impact on my life for a number of reasons. Of the two requested interactions, one led to one of my most highly cited articles [Carulla et al. 2005] whilst the other let me meet and work with the person who would later become my wife and mother of my four children (Hall, Hirota and Dobson, 2004). Furthermore these two interactions got me seriously interested in the subject of measuring and modeling amyloid kinetics, of which I was perhaps first proponent within the greater Dobson group [Hall and Edskes, 2004]. Riding the customarily required rusty bicycle around town I really enjoyed my time working in Cambridge and was genuinely grateful to Chris for allowing me the chance to perform some fundamental research, both by myself and as part of a larger team [Hall and Edskes, 2004; Hall and Minton, 2005; Hall, 2005; Hall, Hirota and Dobson, 2005; Carulla et al. 2006; Hall and Dobson, 2006]. At the conclusion of my fellowship my new family (now consisting of four) decided to move to Japan.

For the majority of my time in Japan I worked as a Tokubetsu Assistant Professor within the Institute for Basic Medical Science at the University of Tsukuba. During that time, I was block funded by the Japanese Science and Technology agency (JST), working within a program called the Wakate Initiative for Young Scientists' Independent Research. This program provided sufficient funds to allow me to maintain a laboratory composed of myself and one research assistant for five years. At that time I titled my laboratory research theme as 'Physical Biochemistry of Disease', a designation which I have maintained to the present. Although a little on the lonely side, this period of my life was a fantastic opportunity, as the core funding aspect allowed me to concentrate and plan my work over a longer time horizon than normal. This period also gave me the freedom to research a number of disparate topics, such as those related to complex diffusion patterns within the cell [Hall, 2008a; Hall and Hoshino, 2009; Hall, 2010], factors affecting virus adsorption [Hall, 2008b] and subtle aspects of amyloid biology [Hall and Hirota, 2009; Hall and Edskes, 2009; Hall 2012; Sasahara et al. 2010; Hall and Huang, 2012; Hall and Edskes, 2012]. It was also during this period that I began my association with Biophysical Reviews, first through the publishing of two review articles [Hall and Hoshino, 2009; Hall and Edskes, 2012] and then later, at the invitation of the Chief Editor Jean Garnier, by becoming an Editorial Board Member in 2010. During my time in Japan I made acquaintances with many fantastic Japanese scientists, with one of particular note being Prof. Fumio Arisaka, for whom the journal recently ran a Special Issue for his 70th birthday [Arisaka, 2018; Hall et al. 2018a].

The day after I arrived back from attending the US Biophysical Society Meeting in 2011 the largest earthquake to ever hit Japan occurred just as I was dozing off with jet lag at my desk. This time I was not the only one to run out of the building after the shaking began. Waiting outside, I and my fellow building residents literally fell over as the ground shook and the buildings around us buckled, cracked and split apart. Needless to say, it was quite scary. After the shaking stopped I raced home to my very (very) old house with a sense of complete dread but was extremely glad to meet my petrified family (now we consisted of six) all assembled in the parking lot. Less than an hour later a giant tsunami, generated by the earthquake, struck the coastal regions of the northeast face of Japan, causing the tragic deaths of nearly 20,000 people. A few days later a number of nuclear power plants located in the neighboring prefecture of Fukushima exploded. For a few months things were a little tense. Nevertheless, largely due to the admirable resilience of the Japanese people, a calm emerged and within a year or two things began to return to something resembling normal. Six days after the earthquake I picked up my first (very brave) Masters student, Mr. Phuong Nam Nguyen, from the airport. Two years later (and just in time for Nam to graduate [Nguyen 2013]) my Wakate Fellowship at the University of Tsukuba finished, after which I and family returned to Australia, whereupon I took up a Senior Research Fellowship at the

Australian National University. Although sorry to say goodbye to Japan, the next adventure awaited in Canberra.

After being in Japan for so long, returning to Australia in 2013 was both a pleasure and a definite culture shock! Whereas Japanese scientists were almost culturally mandated to not complain, to be modest and to downplay their research abilities and success, Australian-based scientists and students suffered none of these failings. Working within the Research School of Chemistry I was part of the Section on Biological Chemistry. Soon after starting, I was offered an Associate Professor position at the Institute for Protein Research at Osaka University in Japan. During my time at ANU I juggled these two positions by working for up to half of each year in Japan. This situation made it difficult to run a normal laboratory but nevertheless I somehow managed to successfully supervise one PhD student, Dr. Nicholas Ray [2017] and one Masters student, Mr. Ran Zhao [2018] as well as a number of Honours and undergraduate project students. Whilst in Australia I continued with my research theme on the 'Physical Biochemistry of Disease', but tailored the projects to ones I could carry out whilst shuttling between a dedicated protein research facility in Japan and a chemistry department in Australia. Some examples of my research at this time include [Hall et al. 2014; Hall et al. 2015; Hall et al. 2016; Dalpadado et al. 2016; Hall, 2017; Hall et al. 2018; Zhao et al. 2016; Hall et al. 2018b].

*Present Day*: I concluded my Senior Research Fellowship at the Australian National University at the end of 2018. Retaining my Guest Associate Professor status at the Institute for Protein Research in Japan, I took an opportunity provided by the ORISE Institute from the US Department of Energy made available to Senior Scientists working in STEM type areas of research. Located within the National Institute for Diabetes and Digestive and Kidney Disease, Laboratory for Biochemistry and Genetics, I currently work as an ORISE Established Scientist investigating the transmission properties of yeast prions using a mixture of computational modelling and transmission/cryo-electron microscopy.

*Conclusion*: The year of 2019 has to date been quite busy. After accepting the invitation to become the new Chief Editor in January, I began the year by setting up the journal's social media program and have, since then, shepherded four Issues to press. Aside from journal related duties, moving countries and getting a research project started, I have used my spare time to write and publish a few articles [Hirota et al. 2019; Wakayama et al. 2019; Hall 2019]. Despite being quite busy, it is nevertheless, still very much a privilege to be associated with the Biophysical Reviews journal. The core twin missions of the journal are to,

(i) invite and facilitate the publication of topical reviews in biophysics by leading experts in the field, and

(ii) help develop and promote biophysical research around the world, particularly within developing areas,

These are aims that I genuinely support and practically speaking, these outlined goals are ones that Biophysical Reviews can play a very effective role in actualizing. Having been associated with the journal for nearly a decade, I have benefitted from the practical (and often humorous) training provided by the two previous Chief Editors (Jean Garnier and Cris dos Remedios) on how to effectively combine pragmatism with a pursuit for excellence. This year I have received much valuable advice, help and support from the journal's Executive Editors and Editorial Board Members. To date, I have enjoyed my working interactions with the IUPAB President (Marcelo Morales) and Secretary General (Juan Carmelo Gomez -Fernandez) and look to continue this good working relationship with the IUPAB Executive, going forward, into the future.

In closing, I would like to encourage the reader who may be interested in writing a review article, to make contact with either myself, or a Member of the Editorial Board, to discuss their idea and to talk about realistic schedules for submission. Our aim is to seek out those with something to say and who can say it well, giving them ample time to do so. When English is a problem, the Biophysical Reviews Editorial team will frequently pitch in and help, so that we can suitably canvass the widest array of international input to the journal.

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# Biophysical Reviews: Past, Present and Future

*by Damien Hall*

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**Published by Springer-Nature Corporation, Biophysical Reviews is the official journal of IUPAB. Starting with its inception in 2009 the journal has evolved from a low volume quarterly, publishing 30 review articles a year, to its current six-issue per year format, publishing 125 articles per year. As of 2019 Biophysical Reviews is one of the top-ranked journals in the world for biophysics related content [Scimago 2019]. Here I provide a short history of the journal and conclude with a look to the future, outlining some plans for consolidation and extension of the impressive growth made to date.**

*A Short History of Biophysical Reviews*

In 2008 IUPAB formed an exploratory committee for the creation of its own journal. The motivation behind this push for a new journal was twofold, it would;

(i.) Provide a mechanism for raising revenue for IUPAB.

(ii.) Act as a publishing vehicle to help execute IUPAB's goals for the promotion of biophysics based education and research.

The net result of these deliberations was the formation of Biophysical Reviews, a journal dedicated to publishing biophysics related content in a topical review format. Established in 2009, Biophysical Reviews was set up as a profit sharing partnership between IUPAB and the Springer Corporation. Under the terms of the joint agreement, the Springer publishing group was responsible for the publishing infrastructure (e.g. physical publishing equipment, maintenance of journal website) and management of the journal (through the employment of a Journal Manager, a number of professional production staff and a dedicated Editorial Assistant) whereas IUPAB was responsible for the appointment of a Chief Editor who would in turn be responsible for determining the constitution of the Editorial Board and setting the academic course for the journal.

The starting directive for Biophysical Reviews was clearly enunciated by the founding Chief Editor, Dr. Jean Garnier, in his opening Editorial [Garnier, 2009],

'Biophysical Reviews is dedicated to publishing short and critical Reviews written by key figures in the field. The aim of the Editorial board is that the subjects covered in these Reviews will—over the long term—be representative of the entire field of biophysics, generally defined as the science of describing and understanding biological phenomenon using the concepts and techniques of physics. In other words, biophysics is to physics as biochemistry is to chemistry.'

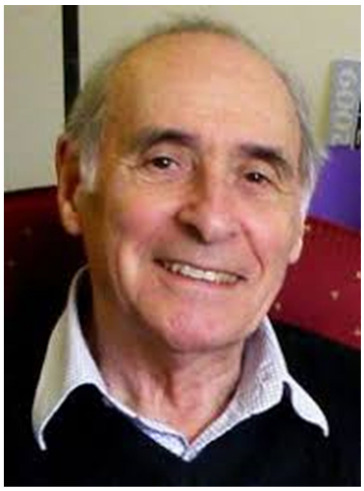
Jean served as the first Chief Editor of Biophysical Reviews from 2009 to 2014 (Fig. 1). During this establishment phase, the journal published four Issues per year with four to six review articles per Issue. Overall, this meant that the journal was producing twenty high-quality review articles (around 200 printed pages) per year. Looking through these early articles one notes the excellent support provided by the Biophysical Reviews' Editorial Board and the IUPAB Council Members who showed great confidence in the journal by publishing their work within it.

Dr. Cristobal dos Remedios (Fig. 1) took over as Chief Editor in 2014 and set about instituting a number of reforms to assist with the expansion and development of the journal. Chief amongst these changes were; (i) Increasing the number of Issues

published each year from four to six; (ii) Increasing the amount of single-themed Special Issues published each year to half of the total number of Issues. By the end of Cris dos Remedios's term as Chief Editor (2014-2019) these two reforms had helped to grow the journal to its current state in which it publishes around 120 articles per year, producing approximately 1000 pages of content [dos Remedios, 2016].

*Present and Future*

After serving as the journal's Deputy Editor for four years, in early 2019 I was invited by the IUPAB Executive to become the third Chief Editor of Biophysical Reviews (Figure). In this section I first outline the present state of the journal, briefly reviewing the activities and contents of the current year. I then describe some future plans that, going forward, promise to help further consolidate Biophysical Reviews' position as one of the top journals in the field.



***Three Chief Editors of Biophysical Reviews: Damien Hall, 2019- (Top), Cris dos Remedios 2014-19 (Middle) Jean Garnier 2009-14(Bottom)***

With regard to the journal matters this year has been a busy one with four Special Issues and two regular Issues planned and a number of significant changes being implemented. One of these major changes has been the commissioning of a large number of Issue specific Commentaries and bespoke Editorials/ sub-Editorials. This has provided an extra dimension to the journal by adding some human interest to the science being discussed. Hopefully this will help to further make the journal into something to be perused cover to cover (so to speak). A second major change has been the establishment of a social media program designed to provide post-publication exposure for both the articles appearing within, and causes promoted by, the journal. This social media arm has been designed to exploit SharedItTM, the principal component of the online content sharing program instituted by Springer [Hall, 2017]. In plain terms, SharedItTM is a web link to a pdf copy of the published Biophysical Reviews' article housed on the ReadCubeTM website, which is only available for online perusal i.e. it cannot be printed or saved by a third party (unless it is also an open access article). Available to all authors and coauthors, the SharedItTM link can be freely posted online by anyone anywhere – potentially affording maximum exposure to an authors' article. To help kick start this maximum exposure potentiality, the Biophysical Reviews' social media program prominently features the SharedItTM link in an Issue summary video housed on the journal's comment disabled YouTubeTM channel. Each article in the video summary is then further highlighted and cross-promoted via individual tweets emanating from the journal's TwitterTM account. These initial entries into the online world can be used directly by the authors to both prime and bolster promotional activities for their article made by themselves, or by interested second parties through the involvement of institutional, public or commercial media services. The details for the journal's social media accounts are as follows:

*Biophysical Reviews' YouTube Channel*

*Biophysical Reviews' Twitter Account:*

@BiophysicalRev1

Moving on to 2020, the journal will undertake two further ventures. The first involves a National Biophysical Society partnership program in which

the journal will devote one Special Issue slot each year to highlight the structure and activities of a particular country's biophysical society. I would like to thank the Executive Committee of the Biophysical Society of Japan for agreeing to be the first to engage this partnering role. The second major initiative for the coming year is the expansion of the Editorial Board to make it both larger and more representative of the world's population centers and institutes carrying out biophysical research. So if you receive an email asking if you would consider joining the Editorial Board of a journal … please don't reach for the delete button too quickly, it could be Biophysical Reviews reaching out to you.

*How to publish in Biophysical Reviews*

In closing, I would like to leave the readers with an idea of how they might make a contribution to the journal. As Biophysical Reviews operates on an invitation to publish basis, in general any article should first be discussed with the Chief Editor or Member of the Editorial Board prior to submission. With this said, the journal accepts articles comporting to one of five general formats.

(i) Short Review (3,000-4,000 words, ~3 figures)

(ii) Long Review (10,000 words, ~10 figures)

(iii) Letter (300-600 words on a scientific topic)

(iv.) Commentary (200-400 words on an event, happening or opinion)

(v.) Editorial (no set format)

The hyperlinks to the journal's main website, the submission portal and the instructions to authors are shown directly below.

Journal Website

Submission Portal

Instructions for Authors

Cost is always an important thing to keep in mind when seeking to publish one's work. Biophysical Reviews operates on a hybrid open access model and as such offers two tracks of page charges. The first track is completely free. On this track the article will be held behind a paywall for six to twelve months before becoming freely available for download from PubMed. However, the authors will immediately receive a personal pdf copy, as well as a SharedItTM link to their article which they are free to distribute/post wherever they like (e.g. their website, TwitterTM etc.). A description of the SharedItTM concept and the advantages it offers to the authors has been previously described within the journal [Hall, 2017]. As a majority of centers of higher learning carry the Springer-Nature academic catalog package (of which Biophysical Reviews is a part) the paywall aspect is not a feature that tends to affect most readers working at a scientific institution, but instead tends to come into play for those trying to download an article from a home network/coffee shop etc. The second track involves the payment of an open access fee of about 2500 Euros. The open access route makes the article immediately freely available to anyone, irrespective of their location and also benefits from a number of Springer cross-promotional activities, across their various scientific journal websites, that are designed to add value to the open access fee. In general, both routes offer the author very suitable publishing outcomes.

**Acknowledgements**

I would like to thank the IUPAB Secretary General Prof. Juan Carmelo Gomez-Fernandez for the invitation to write this short piece introducing Biophysical Reviews to readers of the IUPAB Newsletter. I would like to thank the Institute for Protein Research at Osaka University for continuing remarkable support. I gratefully acknowledge the US Government for funds provided in the form of an ORISE Established Scientist Position carried out at the NIDDK. This research was supported in part by an appointment to the National Library of Medicine (NLM) Research Participation Program. This program is administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy (DOE) and the National Library of Medicine (NLM). ORISE is managed by ORAU under DOE contract number DE-SC0014664. All opinions expressed in this paper are the author's and do not necessarily reflect the policies and views of NLM, DOE, or ORAU/ ORISE.

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# Tributes to Professor Sir Christopher Dobson

*Obituary published by the Department of Chemistry, University of Cambridge*

Heartfelt tributes are being paid to our distinguished colleague Professor Sir Christopher Dobson – a pioneering researcher in the chemistry of neurodegenerative diseases – who died on Sunday, 8 September 2019.

Sir Christopher, known to his colleagues simply as Chris, held the John Humphrey Plummer Professorship of Chemical and Structural Biology here in the Department since his arrival in 2001. He had also been the Master of St John's College since 2007.

His research into protein misfolding – the phenomenon behind neurodegenerative diseases such as Alzheimer's and Parkinson's diseases, as well as Type 2 diabetes – helped to advance the global understanding of these conditions.

Head of Department Dr James Keeler said: "Chris' scientific contributions over a long and very productive career have been outstanding, and his legacy will live on in the many people he welcomed into his research group or collaborated with. Chris was a great nurturer of scientific talent and his group has, over the years, had a huge influence on the direction of research well beyond Cambridge".

Chris was a prominent figure in the department, not only because of his renowned scientific ability, but also because of his kindness and warm demeanour. He received countless academic awards for his scientific achievement, culminating in a Knighthood in the Queen's Birthday Honours 2018 for his contributions to Science and Higher Education.

In 2013 Chris co-founded the the Department's Centre for Misfolding Diseases, which has brought together researchers from a wide variety of scientific backgrounds to investigate the molecular processes underlying neurodegenerative diseases. His personal warmth and enthusiasm played a key role in realising the completion of the new Chemistry of Health building, which now houses the Centre. "As well as being an outstanding scientist, Chris was a great communicator of science to non-specialists, and was able to convince people of the importance of his work," said Dr Keeler.

"The Chemistry of Health Building is a testament to Chris' vision and energy, but more than any building, he leaves behind an outstanding scientific legacy. Our thoughts are with his family, and with his wider academic family who will surely feel his loss very keenly."

Chris is survived by his wife, Dr Mary Dobson, their sons, Richard and William, and his beloved dog, Jimbo.

# Report on EBSA Pre-congress Summer School

## July 17th - 19th, 2019. Real Centro Universitario, El Escorial, Spain

### Event partially funded by IUPAB

The 4th EBSA pre-congress Summer School, supported also by IUPAB, took place in the charming town of San Lorenzo de El Escorial about 45 kilometres northwest of the Spanish capital, Madrid. The venue was the classic Real Centro Universitario Escorial - María Cristina Monastery which, every summer, hosts a number of summer courses organized by the Complutense University. The course started on Wednesday 17 July with an opening session where the students mainly PhD students from 18 different countries (Algeria, Austria, Brazil, Czech Republic, Denmark, France, Hungary, India, Italy, Mexico, Netherlands, Portugal, Romania, Singapore, Slovakia, Slovenia, Spain, UK, Ukraine; 14 male, 19 female) were welcomed and introduced to some of the tutors and organizers, including Manuel Prieto (President-elect, IUPAB), Jesus Perez-Gil (President -elect, EBSA) and John Seddon (Secretary, EBSA).

***The participants and many tutors of the EBSA Pre- congress Summer School, with Greg Winter (Nobel Laurate, 2018, centre) just before the closing reception.***

Everyone was very enthusiastic about the Summer School and happy to be in such a charismatic place - this was aided by the pleasant weather. The intension of these EBSA pre-congress schools is not only to introduce the background to many of the approaches that are often assumed in the main invited and plenary lectures of the main congress, but also to enable networking and friendships to form ahead of the main 11th EBSA congress that took place in the following week in Madrid - many participants have never been to such a large congress alone, and most do not know each other.

The formal sessions started on Thursday 18 July with four methodological lectures, each followed by question and answer sessions, and presented by John Seddon, Jesus Perez-Gil, Manuel Prieto and Maria Garcia-Parajo. The talks were very well received and there was ample opportunities for the students to ask questions and approach the tutors during breaks.

The final session of the day gave an opportunity for students to practice a scientific talk in front of others (PHOTO), and get feedback from the students and tutors. Four students (including 2 IUPAB funded students) rehearsed their talks (as short oral presentations) in preparation for the main congress. Students were asked to vote for the best presentations, which were from Kristýna Holanová and Agnes Abraham – each received a certificate awarded by Greg Winter at the closing ceremony (PHOTO).

***Oleksii Zdorevskyi, Ukraine, and IUPAB supported students, practicing his oral presentational skills at the Summer School.***

Friday was another engaging day with talks from Jose Carascosa and Ed Egelman covering both cellular and molecular aspects of electron microscopy, as well as a session on "Preparing and publishing your first research paper successfully" delivered by Elsevier senior editor Valerie Teng-

Broug. This informal but very informative session gave students some good pointers on how to have their work published and beyond, as well as entering publishing as a career.

***Greg Winter and Tony Watts presenting the Prize for the best student oral presentation to Kristýna Holanová, Institute of photonics and electronics, The Czech Academy of Sciences, Prague***

Later on in the day, 2018 Nobel Prize Winner for Chemistry, Greg Winter, delivered his talk entitled "Harnessing Evolution to create new medicines – the background", and the EBSA students were joined by other delegates at El Escorial who were either attending and teaching on other courses at the venue. Prof Winter's presence also attracted some local and national press which carried out interviews.

On Saturday, the last day of the Summer School, Pere Roca-Cusachs (EBSA 2019 Young Investigator Award winner) and Helmut Grubmüller (Past President, EBSA) gave the background to mechanobiology and molecular dynamics respectively in the morning, before a coach transferred the students to Madrid and to the main congress.

The feedback forms clearly demonstrated that the students enjoyed the event (>95% felt the Summer School fully achieved it aims) which would not have been possible without the generous support of both

***IUPAB supported students with some tutors.***

IUPAB and EBSA. Both organizations were acknowledged in all promotional material and during the workshop.

*Anthony Watts, Oxford, UK (President, EBSA)*

*Jesus Perez-Gil, Madrid (President-elect, EBSA)*

# Report on Biophysics and Structural Biology at Synchrotrons

## January 17th - 24th, 2019. Cape Town , South Africa

## Event partially funded by IUPAB

The study of infectious diseases dominates the South African Biochemistry landscape. The students and their mentors know about the power of structural and biophysical techniques to help understand the detailed mechanism of infection and to suggest the design of potential drugs, but very few have first-hand experience in accessing the technology that makes it possible to identify, purify and visualize potential drug targets.

An important need is to enable African scientists to use resources abroad. This involves not only training to use synchrotron beamlines but also assistance in designing projects, preparing material and using complementary resources located both at home and abroad. The

workshop "Biophysics and Structural Biology at Synchrotrons", held in Cape Town from the 16-24 January 2019 was a significant milestone. Support from the International Union of Pure and Applied Biophysics enabled students and young scientists from the entire country to participate. The scope of the workshop included protein sample preparation, crystallization, data collection, data processing and interpretation and apart for X-ray crystallography, included other structural techniques, including cryo-electron microscopy, X-ray microscopy and NMR spectroscopy. Several case studies were presented and gave students an understanding of how science happened in the "real world" and there was ample opportunity to share experiences of the development of science at and around synchrotrons from the perspective of users from countries having widely varying economies. Most of the non-African scientists who lectured on the course had not previously encountered the conditions in Africa at first hand. The workshop was held in the Aaron Klug Centre for Imaging and Analysis. The available resources enabled demonstrations of X-ray crystallography and electron microscope hardware as well as practical experiences in grid preparation and crystal mounting. Participants were able collect data via remote access to the I04 beamline at Diamond – this was a memorable event for those who had previously shipped their own crystals to Diamond and four students were able to determine the structures of their proteins. An important aspect of the programme was the discussion of the new cryo-EM technology that is revolutionising structural biology. Diamond's electron BioImaging Centre (eBIC) has led the way in making this technology available for academic and industrial use along the same lines as the synchrotron beamlines, with notable success.

***Back row: Lenye Dlamini, Trevor Sewell, Paul Kappo, Andani Mulelu, Lauren Eyssen, Silvia Onesti, Frances Separovic, Subramaniam Ramaswamy, Portia Maumela, Stanley Makumire. Middle row: David Hall, David Bhella, Nikita Nankoo, Lauren Arendse, Jeremy Woodward, Ana Ebrechts, Alice Brink, Serah Kimani, Jasmin Aschenbrenner, Natalia Galdi Quel, Monyai Florina Semakaleng, Graham Chakafana, Ndibonani Qokoyi. Front Row: Francois Jacobs, Carmien Tolmie, Alexander Zwolinski, Frances Ayres, Blessing Oyiogu, Lizelle Lubbe, Phillip Venter, Rodolpho do Aido-Machado, Zanele Molaudzi, Nothando Gasa, Gwyndaf Evans, Tawanda Zininga, Priscilla Masamba, Michael Lawrence***

The workshop was presented by researchers from the UK (Gwyndaf Evans, David Hall, Neil Paterson, Nicholas Devenish, Frank von Delft, Ophir Gileadi, David Wells, Neil Paterson, Raymond Owens, Elspeth Garman, David Bhella), Spain (Eva Pereiro), Italy (Silvia Onesti), Brazil (Richard Garratt), Australia (Michael Lawrence and Frances Separovic), India (Subramaniam Ramaswamy) and South Africa (Paul Kappo, Wolf-Dieter Schubert, Jeremy Woodward, Serah Kimani, Andani Mulelu and Trevor Sewell).

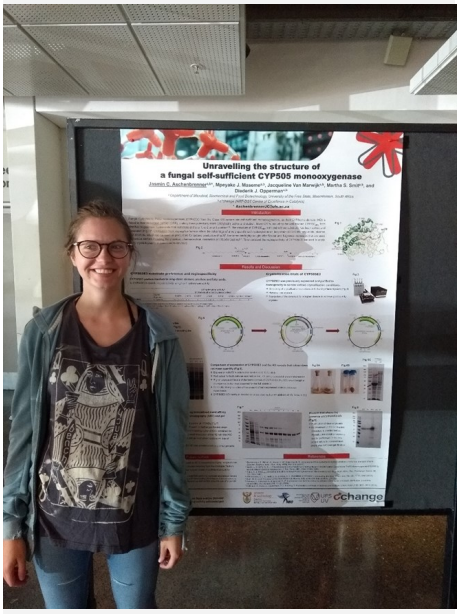
Students, who were sponsored by IUPAB, came from the Universities of Cape Town, Stellenbosch, Pretoria, Kwa-Zulu Natal, Zululand, Venda, Free State, Witwatersrand, Rhodes, Unicamp (Brazil) and the National Institute of Communicable Diseases. Of the 49 students who registered 32 were female representing a positive forward view for the participation by women in the fields of Biophysics and Structural Biology.

Many participants in the workshop contributed to a special issue of Biophysical Reviews.

## Reports of some fellowship recipients

***Jasmin Aschenbrenner***

If I had to describe the workshop in three words, it would have been: it was intense! On the first day, I had already gotten so much input on my project and the parts that I have been struggling with, that I wanted to go back to the lab and work on these new ideas. I stayed for the rest of the workshop and was not disappointed. I did not have any crystals but being able to see friends




collecting data from their protein crystals was very exciting. I really particularly enjoyed the "hands-on" parts of the workshop e.g. where we were able to try and fish lysozyme crystals and work with software to process our collected data to get to the structure. I very much appreciate it, that I had the opportunity to get to know the steps and processes involved in performing cryo-EM. I think this technique will be especially helpful for my project and I am very excited about possible future collaborations in this field. Thank you very much for this great workshop!

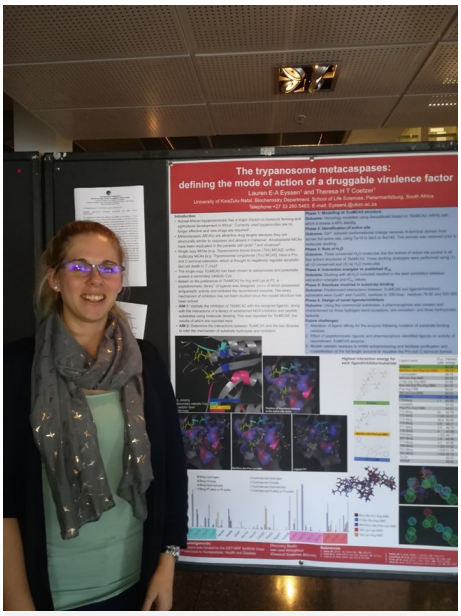
***Graham Chakafana***

*The training we received at the Biophysics and Structural Biology workshop has been a very eye-opening and exciting experience for me as an upcoming scientist. Personally, I enjoyed hearing the experiences of fellow*

*scientists concerning their daily lab experiences in protein structure work. It also encouraged me to keep pushing in my research work as I got to notice that Structural biology takes a lot of dedication, patience and effort. During the practical sessions of the workshop, I managed to have a hands on feel of X-ray crystallography and Cryo-EM. I also received training on the data analysis after carrying out the assays. This workshop also gave me the opportunity to network and meet the world leaders in Biophysics and Structural Biology. I am thankful for the organizers and funders for affording me the opportunity.*

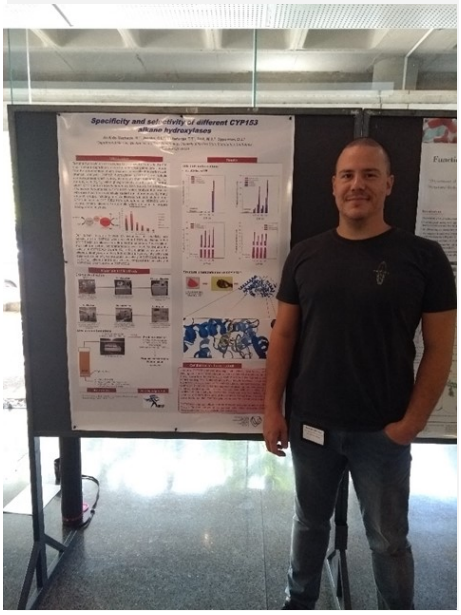
***Lauren Eyssen***

*Through a bursary by the IUPAB, I attended the Biophysics & Structural Biology at Synchrotrons workshop held at the University of Cape Town for the duration of 17-24 January 2019. This workshop provided me the opportunity to meet and interact with various scientists who are experts in the fields of protein expression, protein crystallisation and structural characterisation by NMR, X-ray diffraction and cryoEM. In addition, my interaction with fellow South African post graduate and post doctoral researchers offered an insight to the various structural characterisation techniques being*




*employed in South Africa and the facilities available to do so. Coming from a protease research group, the workshop provided direction and hands on experience with some of the technqiues that I would require to determine the structure of my protease and provide an answer to some of my research questions. Overall, ideas were gained, potential collaborations were formed and physical expertise learned during this workshop which will be implemented in both my and the projects of our research group going forward.*

***Rodolpho do Aido Machado***



*A workshop on Biophysics & Structural Biology at Synchrotrons was organized by the University of Cape Town, in collaboration with IUPAB, and held in Cape Town, South Africa, from 17 to 24 January 2019. The workshop provided an opportunity for the participants to share their experiences in Structural Biology on its most diverse forms and applications making a systematical and logic approach, both theoretical and practical, starting from target selection, protein expression and purification, sample preparation then evolving for the better choice of technique to apply as well as hints and troubleshooting for problems that may occur along this process. Despite being a Synchrotron-based Structural Biology workshop, other techniques like NMR weren't left aside giving the participants a better idea and understanding of the vast possibilities in the field. Lecturers and students had a chance to share their perceptions and problems they faced on the course of their professional lives, so they could learn with each other's experiences. Overall it was an amazing learning opportunity that should be repeated so others can live and learn on an immersive and intense week of knowledge sharing.*

***Zanele Molaudzi***

*Attending this workshop has been a great networking opportunity to meet with various structural biologists from diverse backgrounds with vast experience in*

*different structural biology techniques. I have learned a great deal about X-ray crystallography and how in collaboration with the Diamond Light Source we can analyse and solve structures. I have also learnt of other techniques such as Nuclear Magnetic Resonance (NMR), Small Angle X-ray Scattering (SAXS) and Cryo-Electron Microscopy (CEM) which can also be used to solve structures. Some of these techniques were new to me, however, the workshop covered all topics addressed in depth. I hope we have more of such platforms for learning and engagement. This workshop is an indication of how collaborations and networking can enhance and advance the landscape of structural biology research in Africa.*

***Ofentse Pooe***

*I will like to take the opportunity to thank the organizers of the Biophysics & Structural Biology at Synchrotrons for granting me the bursary to attend the workshop. Before coming to this meeting I have never thought of incorporating Structural biology onto my project, as I believed it was just too hard, I am grateful that my perspective and attitude has now changed towards structural biophysics and in particular towards X-Ray crystallography and Cryo-EM. This has meeting enabled me to form new networks and plan my research better. My primary research interest are chiefly on the recombinant production and characterization of essential P. falciparum proteins. The workshop offered talks that have enabled me to identified missing links*

*in my research and I am inspired to incorporate biophysics in my future projects*

# Report on ISMRM Workshop on MRI of Obesity & Metabolic Disorders

## July 21st - 24th, 2019 | Singapore

## Event partially funded by IUPAB

The prevalence of obesity and related metabolic disorders continues to rise worldwide. In both children and adults, magnetic resonance imaging and spectroscopy have become widely used to quantify not only fat accumulation in adipose tissue depots, organs, and muscles, but also the molecular substrates, products, and dynamic rates of metabolism and biochemical pathways. As a follow-up to the 2012 ISMRM workshop on water-

fat MRI, held in Long Beach, California, the purpose of this proposed workshop is to bring together and reunite internationally recognized scientists and clinicians who are currently developing and applying advanced MRI and MRS techniques to investigate the causes and consequences of obesity and metabolic dysfunctions. The meeting will include invited and proffered oral presentations as well as short power-pitch poster sessions. The workshop's schedule will integrate presentations with ample discussion periods covering advances in water-fat Dixon MRI; new applications of relaxometry, diffusion, and elastography; multinuclear applications; pre-clinical animal studies of white, brown, and beige adipose tissue; the epidemiology of insulin resistance, diabetes and obesity; influences of obesity and metabolic disorders in the young; recent findings in liver, heart, pancreas, kidney, muscle, and bone marrow fat; newfound knowledge revealed from large- cohort and population studies; and the implications of genomics and metabolomics in obesity. An open discussion forum on the future directions and research opportunities will also be held.


***Organizing Committee of the Workshop***

***Group Photo of the workshop participants***

We had a total of 110 registered participants from 18 countries including Singapore, Malaysia, USA, Switzerland, Sweden, UK, China, Hongkong, Repulic of Korea, Australia, Austria, Indonesia, Germany, Bangladesh, Japan, Netherlands, Canada, Phiippines

We also had additional student members ~10 from various disciplines

## Reports of some fellowship recipients

***Lena Trinh***

*The ISMRM Workshop on MRI of Obesity & Metabolic Disorders in Singapore will give me the opportunity to meet and discuss the most recent methodological and clinical advances in MRI of fat, obesity and metabolic disorders with other researchers within the field. The workshop will extend my knowledge within this research field as well as add new perspectives to my research and give inspiration to future projects. During the workshop, I will also get the chance to present my latest work, in vivo validation of MRI based methods for quantifying fatty acid composition, which I*

*hope will be of interest to the workshop attendees and other researchers. To attend this workshop will therefore be very beneficial to me as a PhD student in general and to my research projects, and I am glad that I will be able to do so with support from IUPAB.*

***Daniela Franz***

*Thank you very much for awarding me with the IUPAB Stipend for the ISMRM Workshop on MRI of Obesity & Metabolic Disorders in Singapore on July 21-24, 2019. I was delighted when I received the notification! The Workshop is of great importance for me as it covers exactly my field of research. Every single item on the program is of interest for me. I am currently working as a Radiologist at the Department of Diagnostic and Interventional Radiology at the University Hospital rechts der Isar of the Technical University of Munich. My research focus has been on quantitative MRI in health and metabolic disorders for more than five years. After having published several articles about MRI of adipose tissue in the last few*

*years, e.g. on the identification of brown adipose tissue using MRI, I am currently conducting a large-scale longitudinal study on the MR-based characterization of various tissues in cancer-associated cachexia. The Workshop is an extremely interesting option for me to demonstrate my expertise to a research community with a similar research*

*focus and simultaneously engage in networking and discussions with internationally recognized scientists and clinicians in the field of metabolic MRI in order to exchange experiences and ideas, and to discuss opportunities for possible collaborations. Funding through the IUPAB stipend is a great support for me to attend the Workshop.*

***Sara Saunders***

*Thank you for the generous IUPAB trainee stipend award which allowed me to travel to Singapore and present my work at the ISMRM Workshop on MRI of Obesity and Metabolic Disorders. Since this workshop drew many experts in the field, I had the valuable opportunity to learn from others and gain feedback on my own research*

*relating to Non-Alcoholic Fatty Liver Disease. This workshop gave me deeper insight into the impact of obesity and metabolic disorders as well as the research necessary to better understand these conditions. Additionally, opportunities to speak with others who work in both academia and industry helped me to gain perspective on the variety of careers in the field of medical imaging, which is of interest to me as I consider future career options once I complete my PhD.*

***Peng Hao***

*I'm a Ph.D student from Shenzhen institutes of advanced technology, Chinese Academy of sciences. Our recent work was focused on fat-water separation and quantification methods. Attending the ISRMR workshop*

*on MRI of Obesity and Metabolic Disorders held in Singapore enlightened me of where our work could be applied and what techniques was urgent to be addressed for clinicians. The report about MRI quantification of fat given by Holden Wu was absolutely significant to our future work. The report by Yokoo compared the MRE and MRI also let me know about the strengths and weakness on the performance of liver fibrosis staging. I would like to thank the sponsors of this workshop for their efforts before and during the workshop. Also I would like to thank the speakers for their enlightening reports which covers almost all the aspects related to MRI fat imaging and applications.*

***Cheng Chuanli***

*The workshop provides a chance for me to communicate with the experts from all over the world.*


*Their reports about MRI of obesity and metabolic disorders summarized the previous techniques and results and also pointed out the research directions of these subjects. Specially, the professors pointed out the limitations of my current study on brown fat imaging and gave me lots of advices. Their advices are very useful and inspire me a lot. I believe that my research would be promoted by this workshop. I am very grateful to the organizers of the meeting and looking forward to the next meeting.*

# 20th International Congress of IUPAB a joint event with the 45th Annual Meeting of SBBf and 49th Annual Meeting of SBBq

## October 26th - 30st, 2020 | Foz do Iguaçu, Brazil

*Young Scientist Program*

The **Young Scientist Program** will be an opportunity for young researchers to present results in an international forum and discuss with senior scientists. YSP Fellowships will cover travel costs for 50 young researchers.

*Outreach*

There will be ample opportunity for researchers to disseminate Biophysics and Biochemistry to high school students and the non-academic community.

*Exhibitor and Sponsor Area*

We are committed to ensuring that this congress gives real value for sponsors and exhibitors. We expect close to 2,500 participants from all over the world bringing together distinguished professionals and young students in the field of Biophysics, Biochemistry and Molecular Biology from both academic institutions and private enterprise.

*Venue*

The congress will be held at the Rafain Palace Hotel and Convention Center (http://www.rafainpalace.com.br/v2/home_ing/index.php) which has 43 meeting rooms in 18,015 $m^2$. Lunch will be offered on site to all congress participants and a transport network connecting the main hotels to the convention center will be available. The hotel network in Foz do Iguaçu is modern and has more than 20,000 beds.

*Foz do Iguaçu, Brazil*

The city of Foz do Iguaçu (Brazil) is known for its natural wonders including the famous Iguaçu Falls in the Iguaçu National Park, a Unesco Worlds Heritage Site. Just as a comparison, Iguaçu Falls has a water flow three times higher than the famous US/Canadian Niagara Falls. Additionally, the Iguaçu Falls are composed of about 275 falls of diverse sizes. A footbridge takes the visitors for a close view of the tallest one, The Devil's Throat, which is 97 m high. Boat and helicopter rides are also available. Additionally, a visit to the Iguaçu National Park may include ecological trails and bus and bike tours, in which the visitor can see local animals and plants.

The city of Foz do Iguaçu is easily reached in approximately 1 hour flights from the International Airports of São Paulo and Rio de Janeiro, the main Brazilian hubs with connections to the main cities in the World. Additionally, the location of the city of Foz do Iguaçu, near the Brazil-Argentina border and close to Chile and Uruguay, favors the integration with other Latin American countries.

*20th International Congress of IUPAB a joint event with the 45th Annual Meeting of SBBf and 49th Annual Meeting of SBBq*

IUPAB 2020
SBBf & SBBq

*October 26 - 30th 2020 - Foz do Iguaçu - PR - Brazil*

Congress Venue:

Convention Center
Rafain Palace Hotel

http://www.sbbq.org.br/iupab2020

### Welcome to Brazil!

On behalf of the Brazilian biophysics and biochemistry communities, we welcome you to the joint **20th IUPAB Congress, 45th Annual SBBf Meeting, and 49th Annual SBBq Meeting**, to be held in **Foz do Iguaçu, Brazil, October 26 - 30, 2020.**
This Congress aims to offer a broad international overview of research frontiers and recent developments in Biophysics, Biochemistry and Molecular Biology.

The Annual Meetings of the Brazilian Biophysical Society (SBBf) and the Brazilian Biochemistry and Molecular Biology Society (SBBq) are two of the most traditional events within the Brazilian scientific community. They have been the forum of choice for presentations and discussions regarding the state of the art in biologically relevant phenomena, as well as their social benefits. Science policy, integration with other segments of the economy and outreach activities have also been among the main focuses of these events.

The organizers are committed to an outstanding program with contributions in the form of keynote lectures and symposia, as well as oral and poster presentations. The presence of leading scientists among the invited speakers will certainly contribute to create a very rich scientific environment, which we hope will also allow for bringing together the best of Science in Biophysics and Biochemistry.

The participants are also encouraged, in addition to discussing Science, to find time to experience some of the local culture.
Bem-vindos ao Brasil!!!

**With our warmest regards,**

**Rosangela Itri and Mauricio Baptista**
**Chairs of the Congress**


IUPAB SBBf Brazilian Biophysical Society SBBq

### *Scientific Program and Organization*

The scientific program will be composed of plenary and keynote lectures, symposia and poster sessions organized by the Scientific Committee. The secretariat, composed of 3 fulltime secretaries, and the board of directors will work together with the Organizing Committee in order to prepare the congress.

Confirmed **plenary lectures** will be presented by

**Richard Henderson**, MRC Labs, Cambridge, UK - is a Scottish molecular biologist and biophysicist and pioneer in the field of electron microscopy of biological molecules. He shared the Nobel Prize in Chemistry in 2017 with Jacques Dubochet and Joachim Frank.

**Michael Levitt**, Stanford University - is an American-British-Israeli biophysicist and a professor of structural biology. He received the 2013 Nobel Prize in Chemistry, together with Martin Karplus and Arieh Warshel, for "the development of multiscale models for complex chemical systems

**Chris Dobson**, University of Cambridge - is a British chemist, who is the John Humphrey Plummer Professor of Chemical and Structural Biology. In 2014 he received both the Heineken Prize for Biochemistry and Biophysics and the Feltrinelli International Prize for Medicine.

**Angela Gronenborn**, a native of Colony, Germany, Gronenborn received her undergraduate degree in 1975 and her Ph.D. in physical chemistry in 1978, both from the University of Cologne. She did postdoctoral work with protein NMR pioneer James Feeney at the National Institute for Medical Research in London. In 2004 Gronenborn moved to the University of Pittsburgh to head its department of structural biology, where she has remained since.

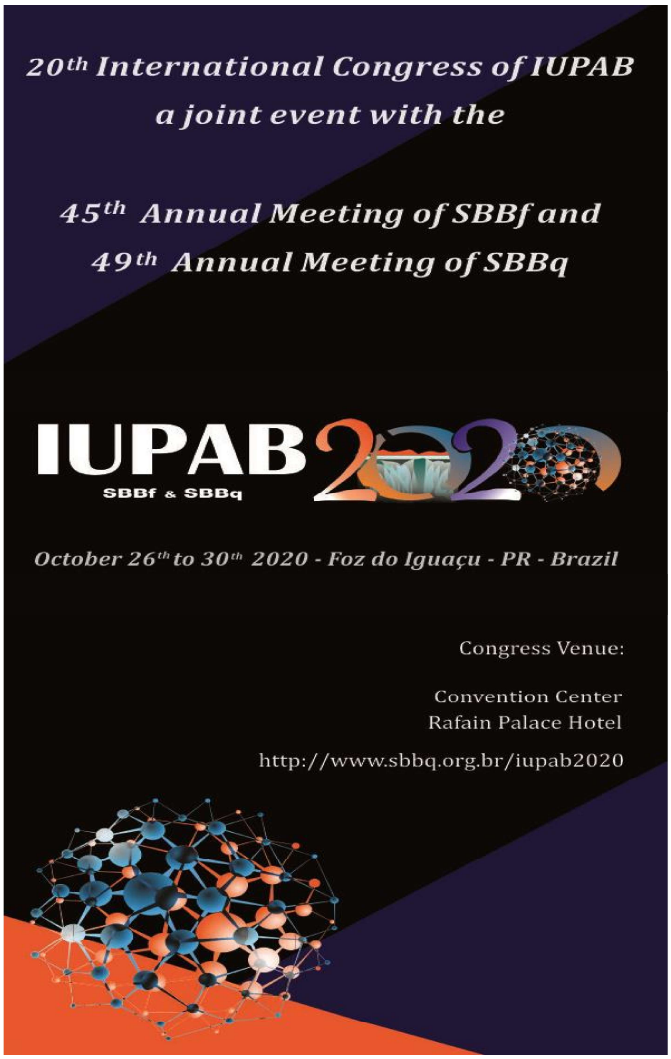
**Ohara Augusto** is Full Professor of Biochemistry at the Departmento de Bioquímica, Instituto de Química, Universidade de São Paulo, Brazil. Her research interests are focused on kinetics and mechanisms of redox enzymes, oxidant and antioxidant mechanisms, infection and inflammation. She has been Associated Editors of Free Radical Biology and Medicine since 2013. She is member of the Brazilian Academy of Science, of the Third World Academy of Sciences and is Fellow of the Society for Redox Biology and Medicine.

**Ramon Latorre** is Full professor of Neuroscience Institute from University of Valparaiso, Chile and Director of Interdisciplinary Center of Neuroscience of Valparaiso. His research interests are focused on understanding how the protein domains involved in sensing stimuli (sensors) and opening the pore (gates) communicate. He is member of Latin America Science Academy Council and Foreign Member of National Academy of Sciences, USA.

**Please, visit our web site for more information**

# Young Scientist Program (YSP):
# A satellite of IUPAB-SBBf-SBBq Congress

**October 26th - 30st, 2020 | Foz do Iguaçu, Brazil**




## Young Scientist Program.

As part of the scientific activities, a satellite IUPAB-SBBq-SBBf Young Scientists Program (YSP) will be held in São Paulo, Brazil, **October 22th to 24th, 2020**. This program, aimed toward students and recent PhDs, will provide a unique opportunity for 40 young scientists from different countries to discuss their scientific results, novel ideas, and career development. Participants in the YSP will be selected from candidates worldwide and will receive fellowships to attend both the YSP and the IUPAB-SBBq-SBBf Congress with funding provided by IUPAB and local agencies.

**Key Dates**

**01/05/2019**: Online registration opens.
**01/10/2019:** Online registration and abstract submission deadline.
**01/12/2019**: Recipients of YSA Fellowships are announced.

Details: http://iupab2020.sbbq.org.br

# IV Meeting of Young Biophysicists

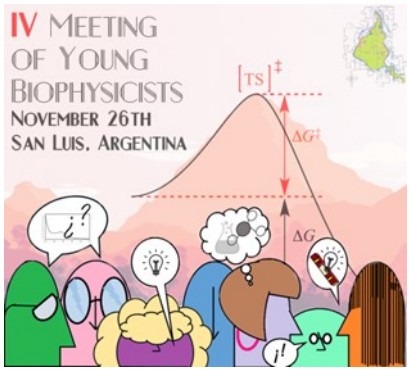
**November 26st , 2019 | San Luis, Argentina**

**Event partially funded by IUPAB**

## *IV Meeting of Young Biophysicists*

**November 26th 2019**

**San Luis, Argentina**




**SAVE THE DATE!**

The Young Initiative on Biophysics **(YIB)** is pleased to invite you to **the IV Meeting of Young Biophysicists** which will be held in San Luis, Argentina on November 26th 2019, as a satellite activity of the Argentinean Biophysical Society (SAB) Annual meeting.

**The Meeting will feature a variety of inspiring activities:**

Get to know your fellows' research through **Oral Presentations** and **fire talks "My Project in Two Minutes**.
Know how to improve your professional skills in **Tutorials** delivered by recognized researchers.
Share wisdom and learn from others in our **Workshops** coordinated by experts in the field.
Come and discuss with us about the women's role and about science in our **Round Tables.**

Call for "My Project in Two Minutes" presentations is from May 1st – June 30th.

Call for Abstracts and Registration is from July 1st – August 10th! **IUPAB fellowships** will be available for selected students.

More information will be available soon. Stay tune and visit our web site!

## Join us in this brainstorming day full of biophysics!

secretaria.yib@gmail.com \Young Initiative on Biophysics @JovenesBiofisicos

## Sponsored by

Sociedad Argentina de Biofísica

# Biology and Physics Confront Cell-Cell Adhesion

*Biophysical Society*

**October 14th - 17th, 2019 | Aussois, France**


Dear Colleagues,

It is with great pleasure that we invite you participate in the *Biology and Physics Confront Cell-Cell Adhesion* thematic meeting, to be held at the Centre Paul Langevin, Aussois, France, October 14-17, 2019.

Cell-cell adhesion is a fundamental biological and physical determinant of tissue organization, both in health and disease. However, the biology and physics of adhesion are often treated very differently. Cell and developmental biologists commonly focus on the molecular mechanisms responsible for cell-cell adhesion, whereas soft matter physicists consider principally the rheological properties of the contact interface. This meeting aims to bring these views and communities together, along with biophysicists and computational scientists, to develop a unified perspective on cell-cell adhesion that could not be achieved by any one community alone.

Visit the website for the program overview and list of speakers. We encourage you to share this information with colleagues who may be interested in attending.

**The deadline to submit an abstract and register for the meeting is June 14, 2019**. **Registration rates for the meeting include registration, accommodation, and meals for 5 days.**

We look forward to seeing you in Aussois!

The Organizing Committee,
Sandrine Etienne-Manneville (Institut Pasteur, France)
Jean-Leon Maître (Institut Curie, France)
Alpha Yap (The University of Queensland, Australia)
Virgile Viasnoff (Mechanobiology Institute of Singapore)

# CODATA-Workshop on FAIR RDM in Institution 2019

*CODATA*

**October 20th - 21st, 2019 | Helsinki, Finland**


The CODATA-Helsinki Workshop on FAIR RDM in Institutions will take place at the National Archives of Finland on 20-21 October 2019. It is a collocated event before the 14th RDA Plenary Meeting, Helsinki, Finland.

Research Data and Research Institutions

Research data are an asset for research institutions. Their creation, management and stewardship imposes considerable responsibilities and requires partnership and alignment with other institutions and research initiatives globally. All over the world universities and libraries have started the task of developing research data services, many aspiring to cover the entire research lifecycle: support in writing proposals and data management plans, repository infrastructures for the storage of data, support in publishing data, assignment of persistent identifiers, lecturing in data management, etc. This broad scope means that such services are often seen as requiring a joint effort from university, library, IT centre, faculties and other stakeholders.

FAIR Research Data Management involves robust planning, policies, infrastructure, training and support. Institutes that produce and consume data are required to ensure seamless accessibility to data and ensure practices that foster its reuse. Often institutes are less aware of existing good practices and progress in implementing Institutional Research Data Management. Improved awareness and knowledge sharing can help reduce duplication in initiatives, and avoid redundant and inefficient practices at various points in the data lifecycle. There is a widely recognised need to assist knowledge sharing between institutions and to do this in an increasingly structured way, by using (and where necessary refining) maturity models such as the DCC RISE. Equally, effective knowledge sharing can help reduce the gap between rich and poor institutions and between universities or research organisations in economically advantaged and disadvantaged contexts. Effective RDM practices can also make the process for sharing and reusing data more streamlined and efficient, thereby enabling research to be more efficient and driving greater impacts to be achieved out of research.

It is timely for actors in the various dimensions of such initiatives internationally to share their practical experiences, research and insights.

The proposed workshop builds on two previous collocated events, the Göttingen-CODATA RDM Symposium (150 attendees) and the Drexel-CODATA FAIR-RRDM Workshop (130 attendees). Papers from the Göttingen event are now appearing in a Special Collection of the CODATA Data Science Journal.

Workshop

An important part of this event will be a workshop looking in detail at issues around benchmarking institutional provision of RDM services. More information to follow...

Keynotes

The event will feature at least two keynote talks on important issues for RDM in institutions. Details to follow…

Registration

The registration site will appear soon!

# CODATA-VizAfrica 2019 Data Visualization Symposium

*CODATA*

**November 18th - 19th, 2019 | Gaborone, Botswana**

The **VizAfrica 2019 Data Visualization Symposium** will take place from **18th -19th November 2019** at the University of Botswana Gaborone, Botswana. The symposium also includes a two weeks **Summer School** training from **11th -15th November 2019** on Data Science/Visualization.

The symposium is part of the University's mission of improving economic and social conditions for Botswana while advancing itself as a distinctively African University with a regional and international outlook. In fulfilling its mandate in reaching out to and interacting with international community, the general public, entrepreneurs, scientists and policy makers on advances in technological innovations for social economic development and industrialization. 300 participants drawn from government ministries, universities, research organizations, corporate, small and medium scale industries (SMEs), policy makers in key sectors of the economy and from international organizations are expected to attend.

The theme of the symposium is **"Application of Data, Information and Scientific Visualization for Resource Management and Sustainability."**

Under this theme, the symposium has six strands or sessions:

1. Climate Change Adaptation and Mitigation
2. Visualization Techniques
3. Agriculture, Food and Nutrition Security
4. Data Analytics, Visualization and Internet of Things (IoTs)
5. Policy Design, Analysis and Strategic Management
6. E-health and Universal Health Coverage

All the six strands/sessions have: Research, industry, keynote speeches and panel discussions tracks.

To contribute to the wider adoption of visualization, the symposium brings together various actors to engage. In addition, the Summer School scheduled for 11th-15th November 2019, offer training in data analytics and visualization towards capacity building.

**Proposals for presentations and posters are invited for each of these strands/sessions. The deadline for proposals is Monday 19 August.**

# XLVIII Argentinean Biophysical Society Annual Meeting

*Sociedad Argentina de Biofisica*

**November 27th - 29th, 2019 | San Luis, Argentina**

Sociedad Argentina de Biofísica

## XLVIII Argentinean Biophysical Society Annual Meeting

**November 27th-29th 2019**

**San Luis, Argentina**


The **XLVIII Annual meeting of the Argentinean Biophysical Society (SAB)** will be held from 27th to 29th November 2019 in San Luis, Argentina. Our annual meeting aims to bring together national and international scientists who carry out original research to promote the development of Biophysics in the country and in the region. The meeting includes plenary lectures, thematic symposia, short talks and lightning talks selected from abstracts and poster presentations.

### Confirmed speakers

#### Plenary Lectures

- Adam Liwo, University of Gdansk, Poland
- Roger Williams, MRC Lab, UK
- Igal Szleifer, Northwestern University, USA
- Gabriela Amodeo, IBEA-UBA, Argentina

#### Symposia

- Pablo Garay (Uruguay)
- Eliana Asciutto (Argentina)
- Gabriel Longo (Argentina)
- Monica Pickholz (Argentina)
- Alejandro Cagnoni (Argentina)
- Sergio Pantano (Uruguay)
- Cecilia D'Alessio (Argentina)
- Mario Del Pópolo (Argentina)
- Cecilia D'Alessio (Argentina)
- Dario Estrin (Argentina)
- Vanessa Galassi (Argentina)
- M. Florencia Gonzalez-Lizzaraga (Argentina)

### Confirmed Symposia

- Glycobiophysics
- Mathematical models, bioinformatics and computational biophysics
- Microscopy and spectroscopy
- Young Researchers

**Young investigator talks selected from abstracts**
**SAB student travel fellowships available**

### Satellite Meeting

The IV Meeting of Young Biophysicists organized by the Young Initiative on Biophysics will be held on November 26th. IUPAB fellowships will be available for selected students.

**Please, visit our web site for more information about the meeting**

# CODATA-RDA School of Research Data Science

*CODATA*

**December 2nd - 13th, 2019 | San José, Costa Rica**

# CODATA-RDA Research Data Summer School

*CODATA*

**January 13th - 24th, 2020 | Pretoria, South Africa**

IUPAB News Number 72, September, 2019

## Executive Committee of IUPAB

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***The Executive Committe and the Council are depicted at the end of he General Assembly in Edinburgh, 18th July, 2017***

IUPAB News #72

IUPAB News Number 72, September, 2019

**Activities of the INTERNATIONAL UNION for PURE and APPLIED BIOPHYSICS**
**From the Secretary-General: Professor Dr. Juan C. Gomez-Fernandez**
**Courier address: Departamento de Bioquímica y Biología Molecular A, Facultad de Veterinaria, Universidad de Murcia, Edificio 17, 30100.Murcia, Spain.**
**Telephone: +34-868884766.**
**Email: jcgomez@um.es**
**IUPAB is registered in France according Loi du 1er Juillet 1901-Art. 5, n° ordre 03/000309, n° dossier 00158190**

The International Union for Pure and Applied Biophysics (IUPAB) was formed in Stockholm in 1961 as the International Organisation for Pure and Applied Biophysics. It was established as the International Union in 1966, when it became a member of the ICSU (International Council for Science) family. Affiliated to it are the national adhering bodies of 61 countries. Its function is to support research and teaching in biophysics. Its principal regular activity is the triennial International Congresses and General Assemblies.

# Important Announcement Sponsorship Policy of IUPAB

As from now on there will be a change in the sponsorship policy with respect to that posted in: http://iupab.org/about/sponsorship/
So that point 8, will read:

Applications for financial support of Conferences, Schools and other should be returned to the Secretary General at least before June 30th of the year prior to the event if it is scheduled for the first semester of the following year or before the 31st of December if it will take place during the second semester.
If organizers of meetings are seeking only the approval of IUPAB, including the use of the IUPAB logo, but not requesting financial support, applications may be submitted to the Secretary General at any time and will be considered by the Executive Committee by correspondence.

**Note from the Editor:**
IUPAB News will be happy to reproduce articles previously published by bulletins or other publications of any of our Adhering Bodies. We will be also happy to consider articles written by biophysicists on scientific or other subjects of broad interest for the biophysical community. You may contact the Secretary General with respect to this matter.

**IUPAB is not responsible for the opinions expressed in the articles here included, nor necessarily share these opinions.**

**The Editor of IUPAB News is the IUPAB Secretary General Juan Carmelo Gómez-Fernández. This publication is produced and published at the University of Murcia, Departamento de Bioquímica y Biología Molecular A, Campus de Espinardo, Murcia, Spain.**

**Assistant Editor: Alessio Ausili**

**It can be found online at: http://iupab.org/category/newsletters/**

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