



INTERNATIONAL UNION for PURE and APPLIED
BIOPHYSICS

IUPAB NEWS

No. 57, December 2011

Editor: Louise Matheson
Email: mail@iupab.org

Activities of the INTERNATIONAL UNION for PURE and APPLIED BIOPHYSICS
From the Secretary-General: Professor C.G. dos Remedios, Bosch Institute,
Anderson Stuart Building F13, University of Sydney, NSW 2006, Australia.

Courier address: Room W103 Anderson Stuart Building (F13), Fisher Road,
The University of Sydney, 2006, Australia.

Telephone: (+61) 2 9351 3209. **Facsimile:** (+61) 2 9351 6546

Email: dosremedios@iupab.org

IUPAB is registered in France according Loi du 1^{er} Juillet 1901-Art. 5, n^o
ordre 03/000309, n^o dossier 00158190

CONTENTS

Editor's Note	page 3
Report from the Secretary-General, Professor Cris dos Remedios	page 4
General News Item	page 6
Report from the Treasurer, Professor Patrick Cozzone	page 7
Report from the Past President, Professor Kuniaki Nagayama	page 9
General News Item	page 11
Report on <i>Biophysical Reviews</i> , Professor Jean Garnier	page 12
General News Item (photo)	page 13
Women in Science – Profile of Professor Michelle Simmons (Australia)	page 14

Editor's Note



The highlight of 2011 for IUPAB was the 17th IBC Congress held in Beijing from October 30 – November 3, which I attended with the Secretary-General, Cris dos Remedios.

It was a very busy time, both in the weeks and months leading up to the congress, attending to the organizational details, and then during the five days at the China National Convention Center complex in Beijing.

A personal pleasure for me was to meet so many of the delegates from the Adhering Bodies, as well as the Executive members, with whom I have been in email contact over the last few years.

The Travel Awards for Young Scientists to attend the Congress also led to email acquaintance with many young researchers. It was a delight to meet the recipients in person. The overall quality of the applications was extremely high, and the choice of recipients was very difficult for the scientific panel.

Once again in this issue we continue the **Women in Science** feature with a profile of Professor Michelle Simmons, who is widely regarded as a leader by the international research community.

We have plans to revamp the IUPAB website in 2012. And speaking of the website, please continue to use this forum to advertise your conferences, schools, etc., and to contribute any news items from your own national biophysics community.

This year also, for the first time, we plan to publish a mid-year issue of the *News*. The Report from the new President will be included in that issue.

With best wishes for the year ahead,

Louise Matheson
Editor
mail@iupab.org

Report from the Secretary-General



The 17th IBC Beijing: Congresses come around every three years and they are always a strain, as well as a pleasure. 2011 was no exception. In February the Executive met in Beijing with the Biophysical Society of China (BSC) to review the planning, and to inspect the new facility at the Chinese National Convention Center. Those readers who attended the 17th IBC will agree the new Center was an excellent choice. However, in August, registrations (<1200) were ominously low. Ultimately, registrations climbed to about 2400 and sighs of relief were heard all round. For information on the financial profitability of the Congress, I refer you to the Treasurer's report.

Thanks to the Biophysical Society of China: Professor Zihé Rao and his team were the consummate hosts. They did the lion's share of logistics such as selecting session chairs and symposia topics. They provided a private room for Executive meetings and for the presentation of the Young Scientist Travel Awards. They also provided a venue for the meetings of the retiring and new Councils. In particular I want to thank Shunyi Wei and Xiyun Yan for making so many things go smoothly.

Student Travel Awards: These travel awards represent a significant contribution by IUPAB to its many adhering bodies, and although they were distributed across nearly all the adhering bodies, they were perhaps most useful and more appreciated by those from developing countries. The awards are intended to *help defray* the travel costs of young investigators coming to the Congress. A significant effort was put in by the Executive, who assessed more than 120 applications for the available USD50,000. The *IUPAB News* Editor, Louise Matheson did most of the administration, processing the claims, dealing with uncertain emails, visas issues, and answering the many queries. We decided to pay the awards in cash in Beijing, mainly to ensure that the students actually turned up! (see the photograph elsewhere in this issue of the *News*). Post-congress, Louise sent out printed travel award certificates to those who requested them.

New Election Method for IUPAB

Council: At an Extraordinary General Assembly held prior to the main General Assembly in Beijing, the delegates voted to change the voting system for electing the President Elect, Treasurer and Secretary-General and members of Council as well as for selecting a congress venue. They adopted a system which requires only a single round of voting.

Biophysical Reviews: The journal is doing well but significantly more time and effort needs to be invested in soliciting and reviewing subscriptions if we are to succeed with out bid for an Impact Factor in 2012. For more detailed comments I refer you to the comments by the Editor-in-Chief in this issue.

Developments in Africa: In 2010 we were successful in obtaining a Euro30,000 grant from ICSU to run an educational “experiment”. This involved moving about a dozen students and early career investigators from their home countries to Brazil to attend a biophysics school in Rio de Janeiro, Brazil and then gain practical experience in laboratories in the Federal University of Brazil. This congress was capably organized by Marcelo Morales and it brought these young Africans in close contact with about 240 similar students from Latin America. Both continents had a history of European colonization. Student surveys after their two and a half week experience confirmed they had a positive experience. In 2012 we are planning to provide a 3-4 month

experience in research laboratories in Argentina and Brazil.

New IUPAB Committee for African and Arab Capacity building:

IUPAB interest in developing biophysics in the African continent will open a new chapter when Professor Alicia Alonso (Spain) mobilises her new committee with the help of Professors Manuel Prieto (Portugal) and El Gohary (Egypt). There is a wealth of latent biophysics talent in this region of the world, and their task will be to develop biophysics capacity over the next triennium.

Computational Biophysics:

In November 2011 we organized a two-session workshop on computational biophysics. The focus here was on computational operations that could be done with a minimum of equipment (including computer power) and therefore could be an inspiration for bright young minds in developing countries. The seven contributors covered a diversity of approaches ranging from energy minimisation of protein structures to the use of computers to select the optimal areas for quantitative microscopy. We plan to incorporate a wide range of computational biophysics approaches into a special edition of *Biophysical Reviews*. The closing date for submissions is early May 2012, and anyone interested in contributing to this issue should contact me well before that deadline.

Biophysics Schools Funding in 2012: We received five applications for funding biophysics school. The successful applicants are: Brazil (USD10,000), Bulgaria (USD7,000), Czech Republic USD5,000, and Serbia USD3,000. IUPAB would have preferred to be more generous had it not been for significant expenses associated with the Beijing Congress.

Cris dos Remedios
Secretary-General
December 23, 2011.

News Item: Sydney Morning Herald, December 14, 2011 and University of Sydney website

Professor Cris dos Remedios of the Muscle Research Unit in the Discipline of Anatomy & Histology has won a Health award at the Australian Innovation Challenge out of a field of 300 entries, as part of a cross-discipline team of four.

Their innovation will impact on industries such as chemical, food and biofuel manufacturing, as it will allow continuous flow enzymatic processing.

They have developed a new technique for attaching biomolecules to surfaces.

“There is a vast range of sensing and diagnostic devices that use

biomolecules, like proteins, attached to surfaces. Our new technology will enhance the performance of these devices, as it provides a more effective way of attaching biomolecules to surfaces” explained Professor Marcela Bilek from the School of Physics, one of the team.

“The technology will also enable implantable biomedical devices that are not only biocompatible, but can stimulate optimal tissue responses in the person who has the implant. This will help reduce the problem of implants – like hip and knee replacements or stents in the heart – from being rejected by the body.”

The other two team members are Prof. David McKenzie (School of Physics) and Prof. Tony Weiss (School of Molecular Bioscience).

Report from the Treasurer Professor Patrick Cozzone

The financial position of IUPAB has remained stable during the period 2009-2011, and the Executive Committee has been vigilant to commit only expenditures that could be matched by IUPAB limited revenues. In 2009 and 2010, the main expenses have been the support of educational activities around the world (international workshops and courses).

In 2009, IUPAB has allocated ca. 30,000 euros to five schools and workshops held in Brazil, Bulgaria, Croatia, India and Romania.

In 2010, a similar amount has been devoted to educational and research meetings in Brazil, Romania, Croatia (joint Australian-Croatian workshop) and the United Kingdom.

A special support was granted by IUPAB in conjunction with ICSU to fund the Brazil-Africa colloquium in Biophysics, and the Latin American Postgraduate Program in Biophysics, jointly held in Rio de Janeiro in September, 2010.

In 2011 no workshop was subsidized as most of the IUPAB resources were aimed at supporting the 17th International

Biophysics Congress held in Beijing October 30-November 3, 2011, in collaboration with the Biophysical Society of China.

As with all previous triennial meetings, IUPAB participated financially by allocating 35,000 euros to the operational budget of this important event. In addition, IUPAB allocated 42,000 euros in travel fellowships to support the participation of 100 students and young researchers coming from 28 countries around the world.

For 2012, IUPAB has resumed its policy of supporting educational and training activities, and 4 workshops and international schools have been selected to receive financial help from IUPAB in Bulgaria, the Czech Republic, Latin America (Brazil and Argentina jointly) and Serbia.

IUPAB accounts for the years 2009 and 2010 have been formally verified in October 2011 by a firm of independent auditors (ACE, Audit Conseil Expertise, a member of PKF International), which has concluded: *“Based on our review, nothing has come to our attention that causes us to believe that the accompanying financial statements (of IUPAB) prepared in accordance with France accounting standards*

contain any material misstatements. During the course of our assignment, all the relevant documentation has been reviewed controlled and we have nothing to mention about the conformity with French generally accepted accounting procedures. In our opinion, the accompanying Cash balances and statement of income and expenditure of the Beneficiary (IUPAB) for the years ended December 31, 2009 and December 31, 2010 fairly present the financial position (of IUPAB) at those dates and the results of operations for the periods then ended.”

The quasi-sole source of income for IUPAB remains the subscriptions from adhering bodies and for this reason, the Treasurer’s office has been very active in reminding all adhering bodies that their dues must be paid as early as possible in any given year, in order to allow IUPAB to cover in time its financial commitments to support workshops, courses and other activities around the world.

***P.J. Cozzone
Treasurer, IUPAB***

**Report of Professor
Kuniaki Nagayama, NIPS,
Okazaki, Japan**



For three years and nine months I have been President of IUPAB, since February of 2008. Recalling this rather long term, I am overwhelmed with shame for my too little contribution to IUPAB as a President compared with that given by the other IUPAB executives, particularly by the Secretary-General (SG). On behalf of the Executive, I will illustrate our endeavours in this term.

Membership of IUPAB

IUPAB now has 54 adhering bodies, and allowing for all members in those bodies the total number of people under the IUPAB umbrella is estimated to be about 23,000. There are four regional associations such as Biophysical Society (US) in North America, LAFeBS representing Latin America, EBSA representing Europe and Arabia, and ABA representing Asia-Oceania. The North American block has

about 9,000 society members, LAFeBS approx. 800, EBSA approx. 3,500 and ABA approx. 9,000. This is not enormous compared with those of other popular fields such as molecular biology (IUBMB). We have a lot of room to invite more researchers, particularly more young researchers, to IUPAB through its adhering bodies.

Biophysical Reviews

The term began with two favourable events: a new logo for IUPAB, and the inception of *Biophysical Reviews*. The former is a masterpiece, winning through a tough competition of nine applications. We are grateful to the Brazilian Biophysical Society.

The latter is a gift from the previous Past President, Ian Smith, who put his energy into managing the difficult negotiations with publishers. In co-operation with Springer, in 2009 we were successful in initiating the new journal. It can be risky starting in the field of biophysics, even though it is devoted only to reviews and managed by an international union supported by an international publisher.

In spite of great efforts by Jean Garnier, *Biophysical Reviews* is still swaying in the ocean of mass-publication and looking for steady survival. Therefore officers, adhering bodies, and everyone under the IUPAB

umbrella are strongly requested to support it by their contributions.

Regional Activities

In 2009 I had a chance to visit three developing countries to attend biophysical meetings organized by regional societies:

- i) 9th International Summer School of Biophysics in Rovinj, Croatia;
- ii) 7th Iberoamerican Biophysics Congress in Rio de Janeiro, Brazil; and
- iii) 2nd International Biophysics and Biotechnology Congress at GAP in Diyarakir, Turkey.

In my 20-day journey as IUPAB President I met many young people whose enthusiasm and interest in biophysics was evident. Next, within my knowledge, let me summarize the biophysical meetings held in the four regions from 2008 to 2013.

Biophysical Society : 2008 Long Beach, 2009 Boston, 2010 San Francisco, 2011 Baltimore, 2012 San Diego and 2013 Philadelphia. LAFeBS: 2009 Rio de Janeiro, Brazil, conjoint with 7th Iberoamerican Congress of Biophysics. EBSA; 209 Genoa, Italy; 2011 Budapest, Hungary and 2013 Lisbon, Portugal.

ABA: 2009 Hong Kong, 2011 New Delhi, India and 2013 Jeju, Korea.

These regional activities will hopefully be the platform for frequent communication between biophysicists. There have been various kinds of meetings

planned to extend the biophysical capacities. Among them, the most prominent was the capacity building in Latin America as the IUPAB POSLATAM (Latin American Postgraduate Program of Biophysics). In particular, the biophysical educational experiment to bind Latin America and Africa must be noted.

The program was organized by the Latin American Federation of Biophysical Societies (LAFeBS) and IUPAB. The POSTLATAM operation is currently coordinated by Dr. Marcelo Morales who is also the President of LAFeBS. In 2010 it held a very special course, which was reported fully by Dr. Morales in the 2010 *News*.

Capacity Building Activities

In non-congress years of 2009 and 2010 IUPAB financially supported the following programs, schools and workshops:

2009: (1) Sofia, Bulgaria "School of Protein Science. From basic research to drug design"; (2) Mumbai, India "Workshop on NMR and its Applications in Biological Systems"; (3) Rovinj, Croatia "Biophysics Summer School"; (4) Rio de Janeiro, Brazil "Latin American Postgraduate Program Course of Biophysics" and (5) Romania "Biophysics for Human Health".

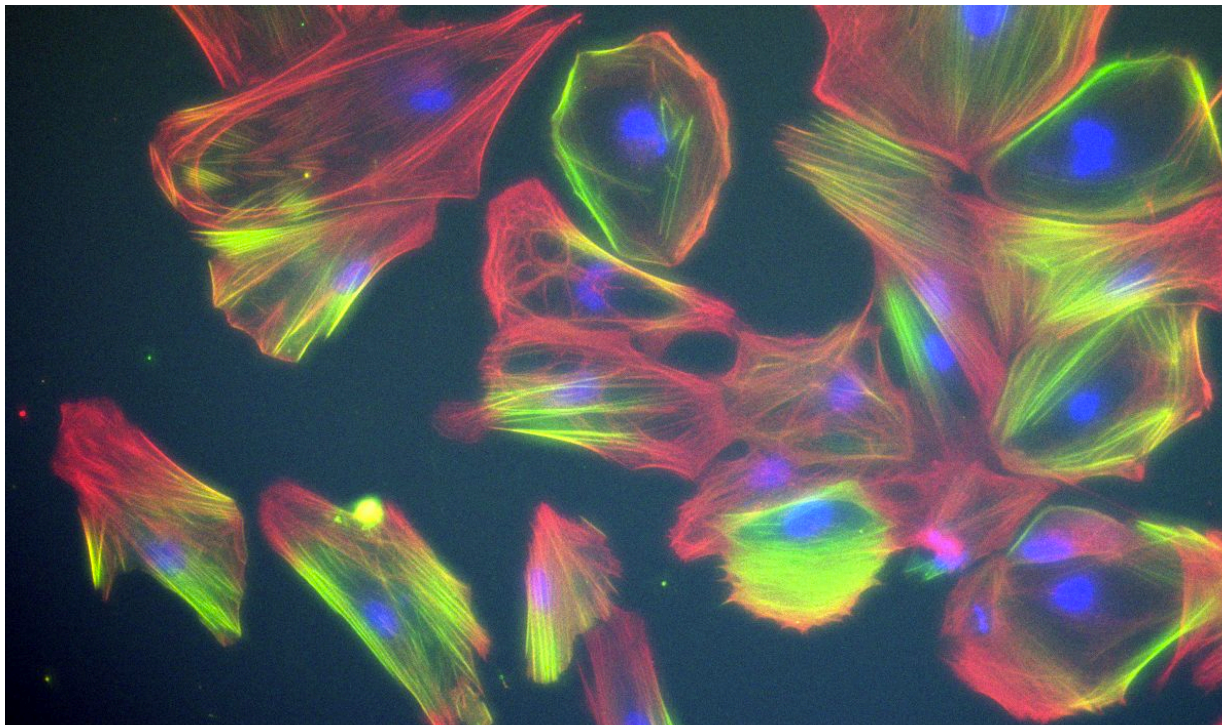
2010: (1) Salta, Argentina "3rd Latin American Protein Society Meeting"; (2) Rabat, Morocco "Biorisk Management Training

Course”; (3) Rio de Janeiro, Brazil “Latin American Post-graduate Program of Biophysics” Course”; (4) Split, Croatia “Joint Australia-Croatia Workshop on Antimicrobial Pesticides” and (5) Warsaw, Poland “11th meeting of the European Calcium Society.

Toward the 17th International Biophysical Congress of IUPAB.

There were several meetings held by Council and Executive in preparation for the Congress in Beijing. These were fully detailed in my last report as President in the 2010 News.

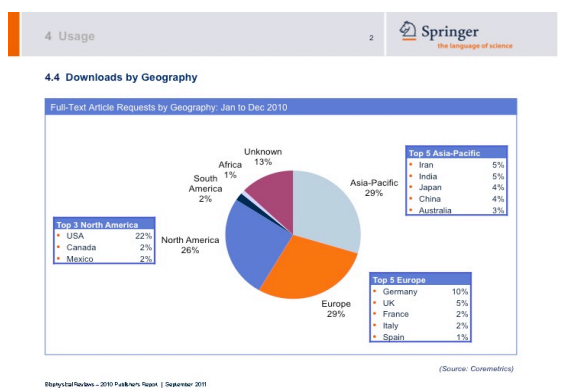
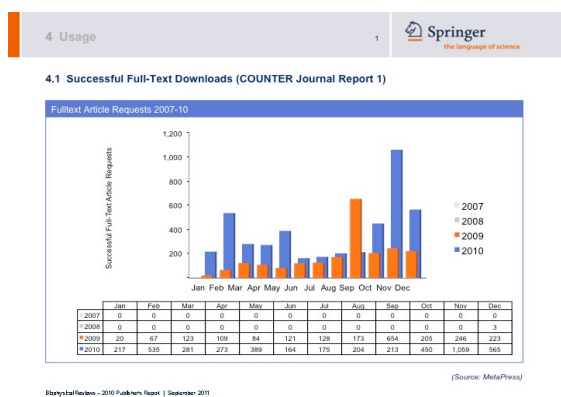
Kuniaki Nagayama
Past President
2008-2011



An Australian stem cell researcher, Dr. Leslie Caron, is the first Australian to win the international IN Cell Image competition with her striking microscope image of stained cells. Her photos illuminate the proteins in muscle cells derived from embryonic stem cells, and allow her to investigate the muscle-wasting disorder fascioscapulohumeral dystrophy. The photographs will be showcased at Times Square, New York.

Report on Biophysical Reviews

Launched in 2009, *Biophysical Reviews* is now in full swing. It is receiving strong attention from the biophysics community, as exemplified by the number and the geographical extension of the downloads (see slides 1 and 2 taken from Dr. S. Schwarz, Springer).



The two peaks of download numbers in September 2009 and November 2010 correspond to a period when Springer made available free online all the manuscripts of those issues.

Springer is doing a wonderful job advertising *Biophysical Reviews*,

complementing the activities of IUPAB members. There is in this collaboration a remarkable synergy worth mentioning.

Since the last International Biophysics Congress in Beijing, six contributions in a few weeks have been received. A special issue devoted to Computational Biophysics is in preparation for the end of this year, with nine authors who have agreed to participate. This special issue will be jointly edited by our Secretary-General, Cris dos Remedios and by Professor Haruki Nakamura from Japan.

The next two or three years are vitally important for *Biophysical Reviews*. This is because we are applying for an impact factor. You can read the conditions for this application on slide 3 (courtesy of Dr. S. Schwarz).

6 Future Springer
the language of science

Impact Factor Application

- Timely publication: each issue to be published online within its quarter
- Minimum number of articles per year: 24 (less for review journals)
- Journal Description: 1-2 pages, what makes the journal stand out
- "Conflict of Interest" statement required for all articles: has been implemented
- Evaluation period: 1-3 years
- Embargo period of 3 years in case of rejection

- Get journal description text ready
- Send application before end of 2011
- Establish constant manuscript flow

Biophysical Reviews - 2010 Publisher Report | September 2011

Biophysical Reviews is currently covered in Abstracting and Indexing Services: Chemical Abstract Service, Google, OCLC,

SCOPUS and Summon by Serial Solutions.

I would also like to point out that Springer is offering a Table of Contents (ToC) alerting for each new issue, free of charge – you just need to register on the journal’s homepage.

In phase with the season, let me wish a continuing success for

Biophysical Reviews, the journal of IUPAB!

I thank all the members of IUPAB for contributing so willingly to this goal.

Professor Jean Garnier
Editor-in-Chief



Young Scientist Travel Award recipient **Antonio Benedetto** from the University of Messina in Italy, at the closing ceremony of the 17th International Biophysics in Beijing, with **Louise Matheson**, Administrative Assistant to **Cris dos Remedios**, the Secretary-General.

Women in Science
Profile:
Prof. Michelle Simmons
Australia



In November 2011 Prof. Michelle Simmons was named State Scientist of the Year in New South Wales for her pioneering work in the development of quantum computers. Here she is shown being presented with her award by the State Governor, Professor Marie Bashir.

Her team at the University of NSW has already built the world's smallest transistor, and has invented the world's narrowest silicon wire – 10,000 times thinner than a human hair – with the same capacity to conduct electricity as a traditional copper wire.

Professor Simmons is the Director of the Australian Centre of Excellence for Quantum Computation and Communication Technology.

“We’re making devices at the level of single atoms – and we’re the only group in the world who can make them.”

Quantum computers, which will be able to perform multiple calculations simultaneously, are expected to have applications in economic modelling, weather forecasting, airline scheduling, fast database searches and encryption and decryption of information.

Professor Simmons’ most recent work is on the first precision-manufactured device that channels current through a single phosphorous atom precisely placed within a silicon crystal.

As well as being the fundamental building block for creating a practical quantum computer in silicon, her work also addresses critical questions faced by the global semiconductor industry as it attempts to miniaturise below the 45nm node.

Since her graduation in 1988 with Honours in Physics and Chemistry from University of Durham, U.K., Professor

Simmons has had a distinguished career. She is the only woman in Australia to have twice received a Federation Fellowship.

She was one of the first women to be made a professor of physics in Australia (Professor of Experimental Condensed Matter Physics since 2004, University of NSW). On her appointment she was one of the youngest fellows of the Australian Academy of Science.

Although Prof. Simmons has said that quantum computing is not an easy science, another challenge she faces is juggling her scientific career with the demands of a family of three children under eight.

However, she is equally passionate about both. She manages to work long hours and still be home for dinner with her young family by coming into the lab “extremely early” in the mornings. She also has the support of a “fantastic husband”.

The specialised facility established by Professor Simmons forms the largest group of researchers in the world in atomic-electronics. Her ground-breaking outcomes are recognized in the unique funding she receives from the Semiconductor Research Corpn.

In the US, and from the US Army Research Office.

As well as attracting an international team of experts to her unit, Professor Stevens has mentored many students and postdocs who have gone on to other prestigious faculty positions throughout the world.

As you read this, please think of other Women in Science in your own country whom it would be interesting to profile. We welcome any submissions you care to make.

There will be a profile of a woman scientist from Latin America in our mid-year supplement.

I am aware that the general news items in this issue are generally Australia-centric. Again, I urge you to let me know of any local or personal items of interest from your own region.

Louise Matheson - Editor